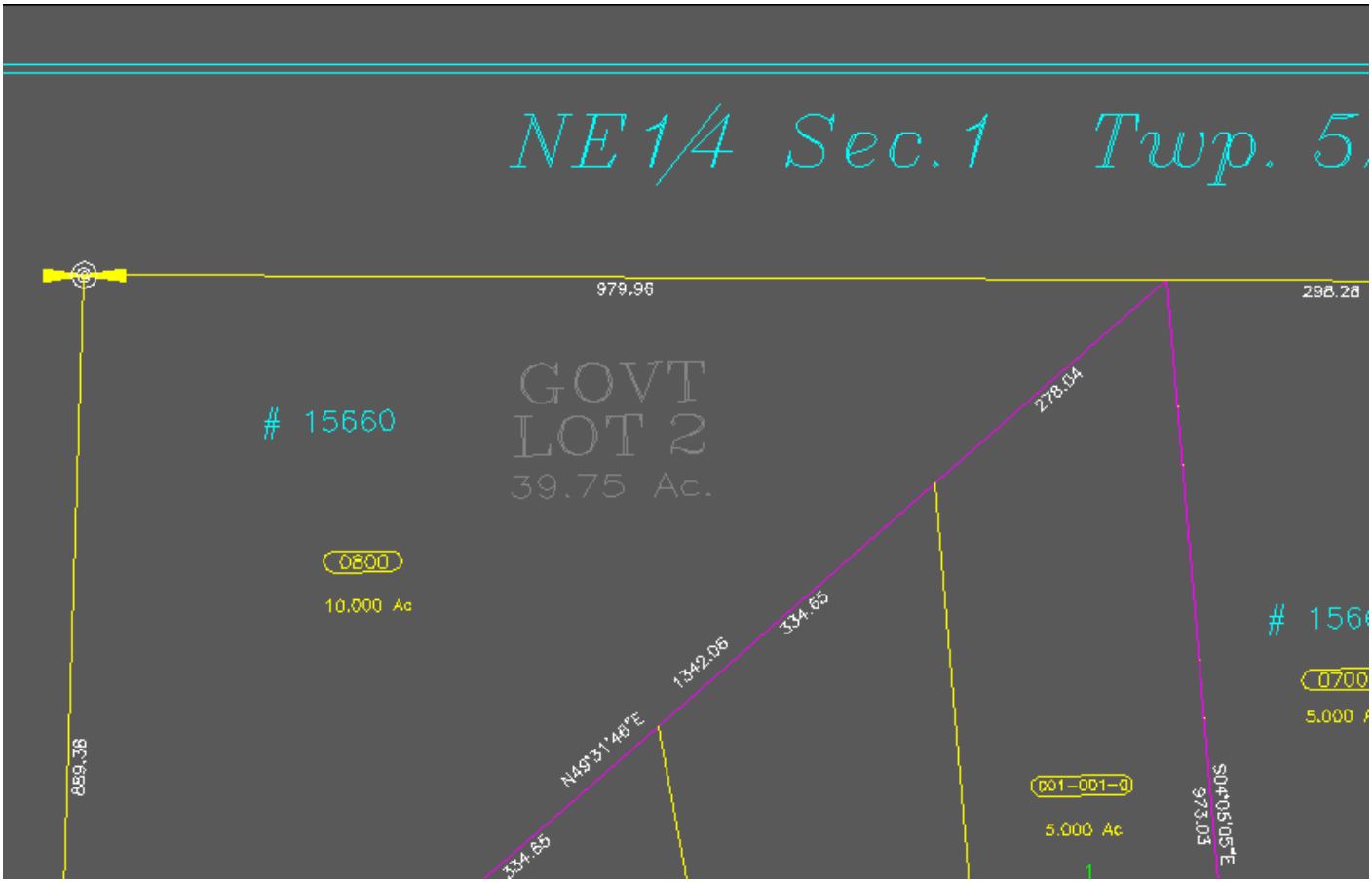
Idaho Association of County Assessors

Mapping Committee Guidelines/Procedures

for

Automated Mapping



For The People of Idaho

STATE TAX COMMISSION

P. O. Box 36 • Boise, ID • 83722

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Preface

By

Craig Rindlisbacher
GIS Manager, City of Rexburg and Madison County, Idaho

There are several reasons for wanting to implement an Automated Mapping (AM) System or Geographic Information System (GIS). Each county or individual agency will approach the development of this system from a unique perspective and therefore will assign differing priorities during the course of its evolution.

For the County Assessor the ability to fully understand land records and ownership information is his or her most important task. To be effective in this position the Assessor must possess all of the relevant information regarding property and he or she must be assured that the data is both current and accurate.

To achieve this there must be continuity in the information. The data must be readily retrievable regardless of the fact that it is constantly being updated and edited. The ever-changing workplace environment cannot affect the data where both people and organizations are often in transition. The information has to remain easy to access and must continue to made available to all.

Placing land information in an AM System or GIS can assist the Assessor in reducing many often repetitive and labor intensive tasks thus allowing staff the opportunity to perform more effectively and efficiently. With the data in a common digital format it can easily be shared with other departments or other public and private entities. This community Land Records Information System (LIS) can also be simultaneously accessed thereby eliminating the costly practice of storing information in more than one location.

Having the database in a common format also creates an opportunity to provide a much-needed public service. Many local governments with a GIS have developed the ability to allow citizens to conduct their own inquiries and produce their own documents pertaining to land ownership. This resource can also prove invaluable to schools, utilities, emergency response agencies, the real estate industry and any number of other public and private organizations.

An Automated Mapping System can be deigned to serve many needs. Each individual need may very well add another set of requirements in how the system will be organized and administered. It may be impossible to identify absolutely every need at the outset. Flexibility or the ability to accommodate future needs must be one of the system design criteria.

The following set of guidelines is the culmination of the efforts of a number of talented Assessor's mapping staff from around the State. It was this groups intent to allow as much flexibility in a system as possible while maintaining a consistent and coherent data structure.

Digital Cadastral Guidelines for the State of Idaho

I. General Information

A. Background

After meeting with a number of assessor mapping staff around the state it was decided that the Idaho State Tax Commission should provide some initial guidance to counties in the development of their Geographic Information System (GIS) programs. A subcommittee was formed and the following guidelines/procedures were developed.

B. Purpose

The goals in providing interested counties with some type of uniform guidelines in the development of their GIS programs are to assist in the development of standards which address the following issues:

- Adherence to recognized coordinates systems and/or map projections
- procedures for data capture and data conversion
- directory and file naming conventions
- layer and attribute schema
- common data exchange formats

C. Benefits

The advantages of a recognized set of GIS standards are many. The Idaho State Tax Commission, the forty-four (44) counties in Idaho and other agencies both public and private may all benefit from programs developed under a common set of guidelines. Those benefits include the following:

- ease of maintenance
- more accurate data
- links to existing tabular data
- improved cartographic quality
- ability to incorporate a variety of existing data sets
- digital data exchange
- uniform construction, maintenance, and organization of spatial data sets
- statewide distributed database of parcel and ownership information

Hardware/Software requirements

A. Computer

Information Technology is, in some respects, a moving target. The period for hardware and software obsolescence is narrowing all the time. With that in mine it is probably pointless to recommend minimum processor speeds and/or amounts of RAM. Suffice it to say that you should purchase the fastest machine within your budget with as much RAM as you can afford.

It is not the intent of the Idaho State Tax Commission to suggest specific manufactures of computers or peripheral equipment. However, there are minimum system requirements which must be considered in developing, maintaining and using a GIS. Graphic data sets are generally large and can take some time in displaying on a computer terminal. Therefore the following minimum requirements are recommended:

- Pentium processor
- Large hard drive
- CD ROM capability
- backup/storage media

B. Plotter

One of the primary functions of a GIS is the ability to represent the information contained in the system as some type of hard copy output either in the form of a map or in a report. As such some type of plotting device will be needed. Following are items to consider in a plotter:

- Color inkjet capability
- large bed (capable of plots up to 36” in height)

C. Software

Again, it is not the intent of the Idaho State Tax Commission to require particular software packages. Nonetheless, there are certain software capabilities that must be considered for both the development and maintenance of a GIS. It should be noted that some of those software capabilities will be determined by which method(s) of data capture are used in the initial creation of the GIS. Following are suggested types of software that can be used to put together a county parcel (cadastral) database:

- Windows 95 or Windows NT
- Coordinate Geometry (COGO)
- Computer Aided Drafting (CAD)
- desktop GIS (for the PC environment)
- database (dBase, Access, etc.)

III. Data Capture

Data capture refers to the manner by which the existing parcel maps and other graphic information will be converted to a digital format. The chosen method will determine both the level of accuracy that can be achieved and the time it will take to construct and maintain the database. The three most common methods are as follow:

A. Scanning existing parcel maps
Scanning is a relatively quick and inexpensive way to convert existing maps to a digital format. Some thought should be given to the following issues:

- quality of existing maps
- relatively low level of accuracy
- can involve some editing
- files must be individually "rubbersheeted" to fit survey control

B. Digitizing
This method of conversion involves the digital tracing of features from existing hardcopy maps and other source documents. Some potential concerns may include:

- quality of source materials
- equipment
- accuracy

C. COGO
Coordinate geometry software allows for the input of legal metes and bounds descriptions of property. Provided that the data is in the proper format (see **Standard data formats**) the resulting files may then be readily transferred to a control grid. Considerations may include:

- training
- available survey control
- time frame

In terms of spatial and/or linear accuracy the three (3) methods described above rank in the following order (beginning with the highest):

1. Coordinate Geometry (COGO) to suitable control
2. Table digitizing (NMAS standards)
3. Scanning existing documents

IV. Survey Control Data / Coordinate system / Projection / Datum

Control refers to a recognized coordinate system representing locations on the earth's surface. Those mathematical coordinates provide a digital link between the graphic elements in a CAD or GIS system and specific points on the ground. The quality of the survey information will determine the spatial accuracy of the entire GIS database.

For most counties control will consist of a digital version of the Public Land Survey System (PLSS) measured in feet using the Idaho State Plane coordinate system projection. The Datum or surface on which surveyed distances are measured may be either the North American Datum of 1927 (NAD27) or the North American Datum of 1983 (NAD83). Bear in mind that contemporary surveys conducted with Global Positioning System (GPS) technology are referenced to NAD83.

IGIAC has officially adopted the Idaho Transverse Mercator (IDTM) projection. Data distributed to counties by the Idaho State Tax Commission will be in stateplane coordinates by zone in NAD83 (as per Idaho Code 55-1705). Conversion programs will be made available through IGIAC.

There are a number of issues to consider prior to obtaining survey or control data. A key consideration in making decisions regarding control is the recognition that survey data is dynamic. Technological improvements coupled with the fact that surveyors often do not agree as to the exact location of particular points on the ground can make the adoption of a control grid a difficult process. Consequently, once parcel and related graphic information has been referenced to a particular coordinate system it can be difficult to adjust the location of map features based on new or better survey information. Additional factors to consider may include the following:

A. Desired level of accuracy
An internal needs assessment should be conducted to determine the level of accuracy that is required by the GIS. Careful consideration should be given in trying to envision the types of applications and queries that will be performed by the system.

B. Budget
Plan to spend money in phases over an extended period of time. As a general rule the higher the level of accuracy the higher the cost for the data.

C. Time frame
A county-wide survey can take a long time to complete and could be further influenced by other factors such as available staff, equipment and weather.

D. Availability of existing data
The priority for incorporating available control data is to be identified and implemented in the following order:

1. Records of Survey, plats or road and highway plans
2. GPS based control for section and quarter section corners
3. Geographic Control Data Base (GCDB)
4. USGS 24K DGLs
5. 100K control

V. Standard data formats

Of primary importance in choosing any GIS or related software are the type(s) of files that can be generated and/or incorporated for use by that and other software packages. In selecting any of the types of software listed above support of the following file formats should be considered:

- **.dxf** - a common drawing exchange file format both generated by and interchangeable with a variety of CAD and COGO software packages
- **.dwg** - AutoCad drawing format
- **.dgn** - Intergraph drawing format
- **ASCII** - a simple text file output by most word processing, spreadsheet and database packages used to incorporate tabular data into a GIS
- .**dbf** - a common database file format
- .**e00** - the graphic file format used by Arc/Info (a leading GIS software package).
- **.shp** - file(s) generated by ArcView 2.0 (and greater)

VI. Database design / attribute schema

A primary benefit of a GIS is that the graphic features can be attributed and through relational database technology those elements can be linked to existing tabular data. Thus, the initial design of a system must be carefully planned to take full advantage of the capabilities of a GIS and to eliminate potentially redundant data entry.

A. Internal needs assessment

Meet with those people who currently rely on maps and related ownership information. It is critical to design a system that includes input from end users. Also try to forecast and plan for potential future users. Some suggestions include:

- inventory current hardware and software capabilities
- document existing data bases (i.e. field names, field widths, etc.)
- develop a data flow analysis chart (to track current data entry)

VII. Quality Control / Maintenance / Editing

The migration from manual drafting to a computerized mapping environment will radically affect how information is updated and maintained. The initial graphic files must be thoroughly analyzed to insure that the data satisfies both current and future needs. The following items need to be considered:

- procedures
- update schedule or cycle
- file management / storage media
- plotting (hardcopy maps)

VIII. GIS Education

The progression toward an automated mapping environment will require staff to develop new skills. Those responsible for performing updates as well as end users will need to adapt to the new technology. The Idaho State Tax Commission can provide guidance to assessor staff in obtaining the training needed in completing the transition.

Many software manufacturers will provide some initial training with the purchase of their computer programs. This type of training can be costly and often will require travel to their facilities. Another available option may be education available from the Idaho State Tax Commission. GIS concepts will be taught in the courses described below:

A. Basic Education

The Basic and Intermediate Mapping Courses set the stage for the background necessary to understand the concepts and ideas needed to use and understand GIS. These courses illustrate the transition from manually drafted maps to computer generated graphics and the required steps. Those initial skills will be addressed as part of the following courses:

- Basic Mapping
- Intermediate Mapping

B. Advanced Topics

Advanced Topics will address some of the issues in making the transition to computer mapping. Students will learn the skills needed to understand the limits and uses of GIS and CAD software programs. Some sample topics may include the following:

- COGO Software training
- Data conversion
- Computer Assisted Drafting (CAD) techniques
- ArcView training
- map production
- incorporating image (raster) data

Idaho State Tax Commission computer mapping and related software support

Due to the rapid increase in the number of counties interested in implementing computer mapping programs the Idaho State Tax Commission has recognized a need to more narrowly define our ability to support those various county mapping efforts.

The Mapping Section personnel are prepared to provide technical support in the use of a number of computer mapping software products. The level of support will include whenever possible command specific telephone assistance, field support on an as needed basis or the development of application specific classes. In addition to this level of support the Idaho State Tax Commission will consider purchasing and becoming proficient with other software packages as determined by customer demand. Currently the Idaho State Tax Commission has at least one licensed copy of the following mapping software:

- Arc/Info (NT platform) (GIS)
- ArcView (GIS)
- AutoCad and AutoCAD Map (CAD/GIS)
- AutoCAD LT (CAD)
- Traverse PC (COGO)
- Greenbriar Graphics Deed Plotter + for Windows (COGO)

In addition to the software listed above the Mapping Section staff also possess at least a familiarity with number of other packages either through past professional experience, classes and seminars or exposure from working with counties around the State. Those packages include the following:

- Intergraph (CAD/GIS)
- MapInfo (GIS)

Because the Idaho State Tax Commission does not own copies of the software listed above the level of support offered by Mapping Section staff may be limited. This level of support will not include command specific telephone assistance. In most instances the staff could recommend other avenues of support or serve as a liaison between county personnel and software vendors regarding training and assistance matters.

Objective

To convert traditionally manually drafted (analogue) maps to a digital format via Computer Aided Drafting (CAD) and/or Coordinate Geometry (COGO) technology.

About the Technology

For many of you this conversion process is your first experience with mapping in a computer environment. There are a number of terms and/or commands that will be introduced in this document. There is a glossary of terms included in the back.

As you all know information technology is in a constant state of change. Computers keep getting faster; software is constantly being upgraded and so on. With that in mind, it should be noted that, as such, this document is also in a constant state of flux.

These procedures contained in this document were written expressly for AutoCAD Map 2000 (i.e., 4.0). While some command names and/or menus may possess slight differences from other AutoDesk products most of the functionality is essentially inherent in all versions of the software (with the exception of AutoCAD LT).

What follows are very task specific procedures developed over time in support of many counties. These procedures vary greatly in that they are dependent on a number of factors. The primary determining factor is how the map data is being captured. For example, some counties are using COGO while others scanned their original source documents and used CAD technology to digitize (or trace) over those images.

In an attempt to simplify maintenance and subsequent distribution of these guidelines all of those procedures developed by the Idaho State Tax Commission are included. As changes occur in software, methodologies, etc. updates will be provided. Not all sections of the procedures will pertain specifically to your needs. However, you may find it beneficial to browse through those sections for specific commands and/or methods that may enhance your efforts immediately or in the future.

Idaho State Tax Commission Base Category Data, directory (folder) tree and file naming conventions for county GIS data

The Idaho State Tax Commission (upon request) will provide any and all available base data to assist counties in beginning their computer mapping effort. That base data is briefly described below. The data can be written to a variety of media in a number of file formats. File format extensions are described below:

.dxf Drawing eXchange Format. A common format for a variety of CAD and COGO packages

.dwg AutoCAD drawing file. These files may be specific to a particular version of AutoCAD

.shp ArcView Shape file.

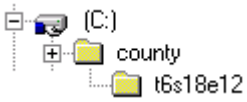
.e00 Arc/Info export file.

Projection: All county data sets reside in Idaho State Plane Coordinates by zone (see accompanying graphic for counties by zone), units are feet and the datum is NAD83 (see accompanying graphic at the end of this section).

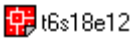
Below is a graphic representing how the Idaho State Tax Commission has elected to house data on our NT server. The drive assigned letter is (F:) contains the folder ***gisdata*** which, in turn houses another folder names ***counties*** containing base category data for the forty-four (44) counties in Idaho

County parcel databases will be organized (or tiled) by section. Therefore, a directory (or folder) for each individual township, range and section must be created. The directory name will reflect the specific section as defined by the Public Land Survey System (PLSS).

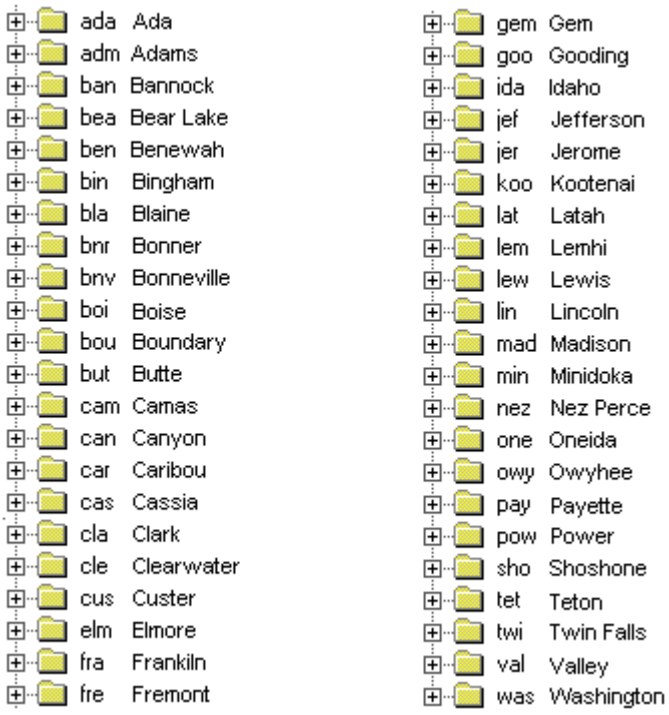
For instance, the folder ***c:\county\t6s18e12*** (see below) will contain all data associated with township (township) 6 south range (range) 18 east section (section) 12 as defined by the PLSS. All such folders will contain at least one graphic file extracted from the Geographic Coordinate Data Base (GCDB) data.



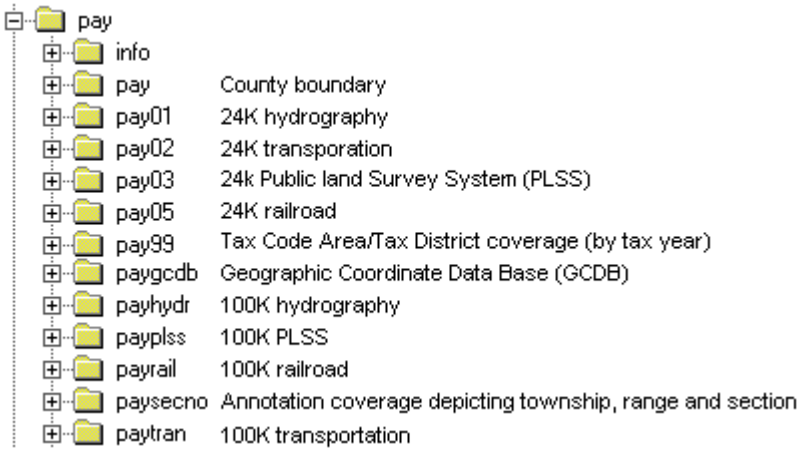
The following AutoCAD drawing file name also reflects the township, range and sectiontion***c:\county\t6s18e12\t6s18e12.dwg*** (see below).



The Idaho State Tax Commission has adopted a three-character abbreviation for each of the counties. That abbreviation is generally the first three characters of the County name. However, exceptions were made for two or more counties whose names shared the first three characters (see below)



Using Payette County as an example following is an illustration of the Idaho State Tax Commissions adopted file naming conventions again using the three-character county abbreviation described earlier



Base Category Data/Directory tree/file naming conventions

Parcel Layering Template

Background

Another product available upon request from the Idaho State Tax Commission is a Parcel Layering Template. The template is in a digital format by way of an AutoCAD template file called ***parcel.dwt***. This file contains a number of preset layers and/or line symbologies that various map features can be associated.

This template was developed over the course of a number of meetings held by a subcommittee formed under the Assessor's Mapping Committee. The subcommittee was comprised of a number of County Mapping personnel from around the state.

The primary objective for the subcommittee was to develop a standardized methodology whereby counties beginning a computerized mapping effort had a place to start while at the same time protecting existing schemas already being employed by counties with mapping systems in place.

During the course of the meeting it was decided that the state should design the template to adhere to the existing American Institute of Architects (AIA) National CAD Layering Standards (where applicable). However, it was also decided that the template should allow for flexibility in letting counties devise unique layers to better suit county needs.

About the Template

Basic map (or drawing features) are identified and assigned to specific layers. Those layer names were designed to serve a number of functions. First, a prefix describes the feature category (i.e., water, PLSS, roads, parcel boundary, etc.). Secondly, the prefix is followed with an underscore and a suffix describing a more specific feature type such as a line representing a county road as opposed to a state highway or lines depicting a river as opposed to a canal, etc.

For example, the layer name **HYD_LAKE** implies that the entity (or entities) to which this layer is assigned is some form of a water (i.e. hydrological) feature. In this case; a lake.

The naming standard can also adapted to include a descriptor providing information about the data and how it was captured or from where it was derived. This information can then used to determine relative accuracy of the data, the age (or vintage) of the data, etc.

For example, again using hydrology (or water) as a theme, the layer name **HYD_LAKE_100K** could be used to indicate that lines associated with that particular layer represent the boundaries of a lake and were obtained by digitizing a map originally drafted at a 1:100000 scale.

The layer name convention could be expanded even further. As in the following example, the layer name **HYD_LAKE_100K_TXT** could be used to assign a string of text (i.e., annotation) representing the name of a particular lake to a specific layer.

There is essentially no limit in how to assign layers and/or layer names. The template can be expanded or reduced based on the level of detail and/or descriptiveness you require for your map data.

* See the table on the next page for a further listing of layer names

State Standard Layer Name	Feature (logical) Layer Name	National CAD Layer Standard Equivalent
HYD_100K_CNL	Hydrography - canal (from 1:100000 scale data)	
HYD_100K_LAK	Hydrography - lake (from 1:100000 scale data)	
HYD_100K_RVR	Hydrography - river (from 1:100000 scale data)	
HYD_24K_CNL	Hydrography - canal (from 1:24000 scale data)	
HYD_24K_LAK	Hydrography - lake (from 1:24000 scale data)	
HYD_24K_RVR	Hydrography - river (from 1:24000 scale data)	
LOT_IMAG	Lot line (digitized from a scanned image)	
LOT_PLAT	Lot line (from a plat)	
LOT_ROS	Lot line (from a record of survey)	
LOT_SURV	Lot line (from a survey)	
PLS_ASSR	Public Land Survey from Assessor records	
PLS_GCDB	Public Land Survey from GCDB	
PLS_GPS	Public Land Survey from GPS data	
PLS_QTR	Public Land Survey - quarter section line	
PLS_SEC	Public Land Survey - section line	C_PLSS_SECL
PLS_SIX	Public Land Survey - sixteenth line	
PLS_SURV	Public Land Survey from a survey	
RDS_CTL	Road - Centerline	
RDS_CTY	Road - County	C_ROAD_{class}
RDS_HWY	Road - Highway	C_ROAD_{class}
RDS_HWY_100K	Road - Highway (from 1:100000 scale data)	
RDS_HWY_24K	Road - Highway (from 1:24000 scale data)	
RDS_PLAT	Road - platted	
RDS_PVT	Road - Private	C_ROAD_{class}
ROW_CNL	Right-of-Way - canal	
ROW_RD	Right-of-Way - road	
ROW_RR	Right-of-Way - railroad	
SUB_PLAT	Subdivision boundary (from a plat)	
SUB_SURV	Subdivision boundary (from a survey)	

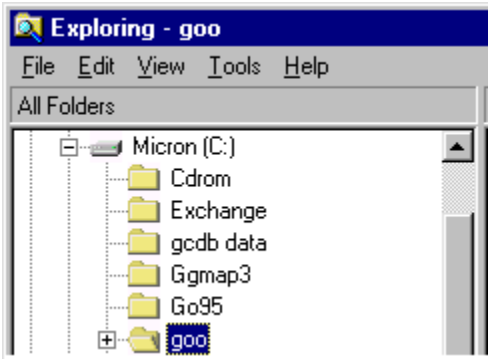
Getting Started

Creating directories (or folders) for individual sections (if necessary)

Before any data capture takes place it is a good idea to setup how the data will reside on your machine (either locally or on a server)

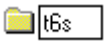
If using **Windows 95** go to **Windows Explorer** and **insert folder** (see below).

Navigate to the assigned drive letter or folder where the data is to reside. In the following example, using theIdaho State Tax Commission's three character abbreviation for Gooding County, a folder named ***goo*** is being created at the C: drive.



With the appropriate drive letter or folder highlighted select **File** followed by **New** and then **Folder** (see below).

With  highlighted simply type in the desired folder name (see below) and <enter>.

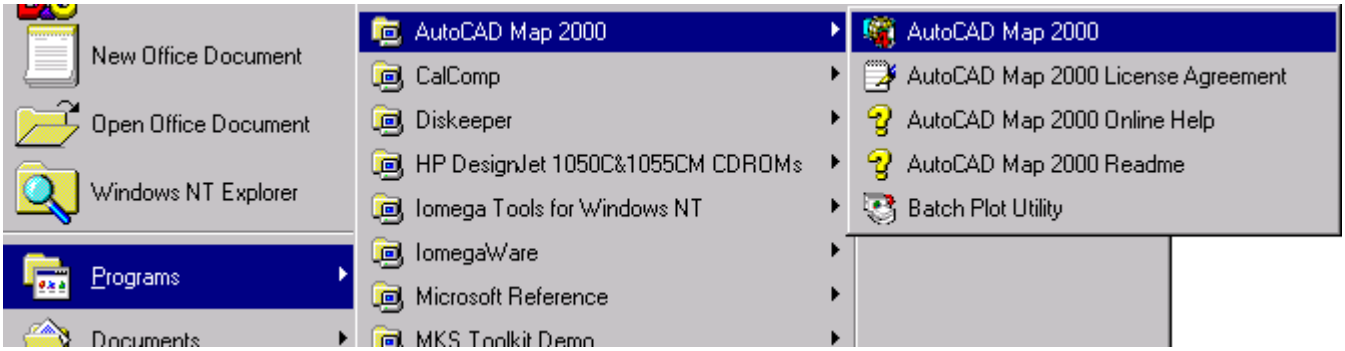


In the preceding example a folder for township 6 South was created below the folder ***goo***

Beginning an AutoCAD session

To begin an **AutoCAD** session.

From the **Start** button select **Programs** and then find **AutoCAD** from the menu (see below)



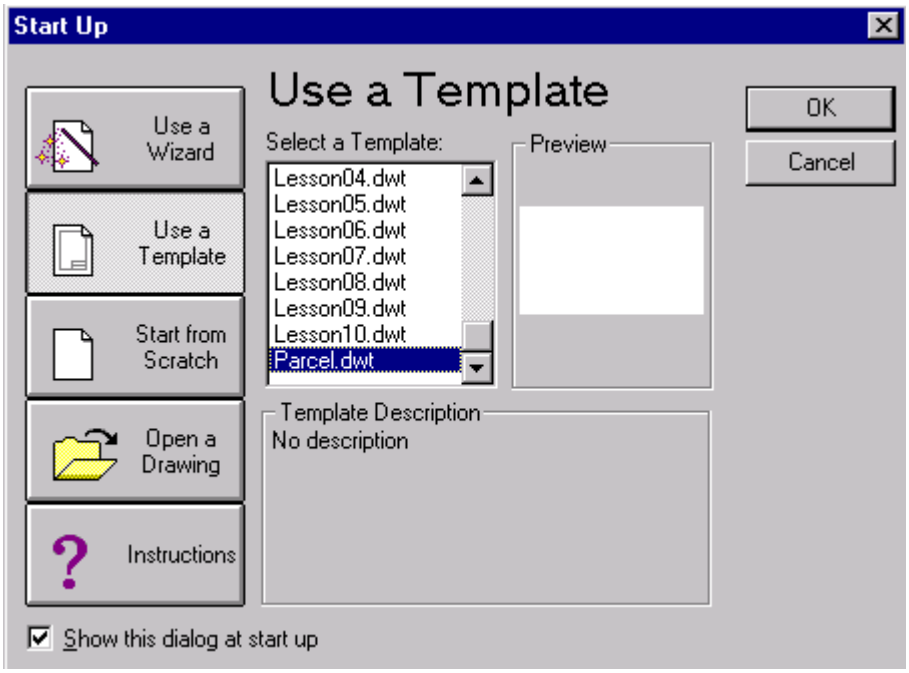
Or, from the desktop 'double-click' the **AutoCAD** icon (see below)

Beginning a new drawing

Assigning the Parcel Layering Template

Depending on the version of **AutoCAD** (or **Map**) that you are using when beginning a new drawing a **Start Up** wizard may appear. At this point the user has the option to **Use a Template**.

To do so 'click' the **Use a Template** button and scroll the list and 'highlight' the desired template (.***dwt***) file and then 'click' **OK**. (see below)

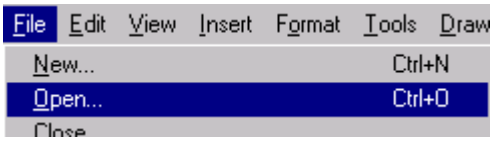


NOTE: The assigned template will remain the default unless otherwise specified.

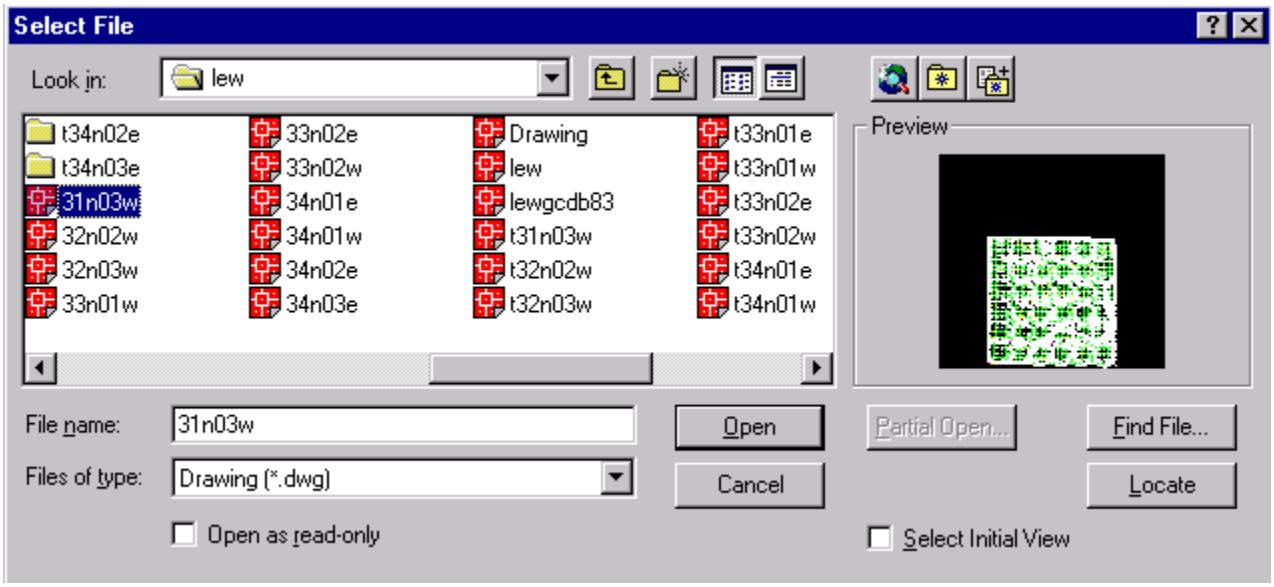
Opening an existing drawing

In this example the AutoCAD drawing (.***dwg***) file named will be opened

From the **File** menu select **Open…** (see below)

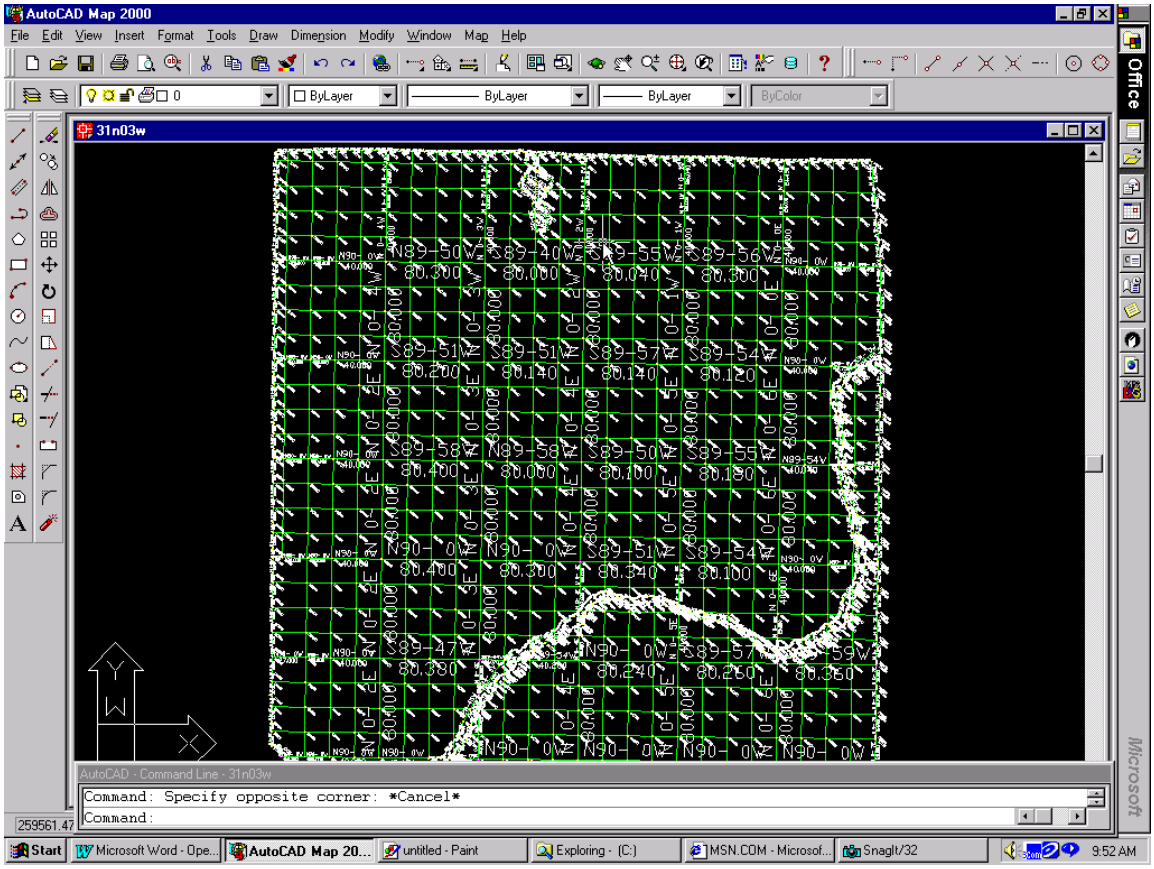


Use the **Select File** dialog box to navigate to the folder containing the desired drawing file. In the example below the file named ***31n03w*** has been 'highligted' for selection. Simply 'click' the **Open** button or 'double-click' the file name to open the file. (see below)



NOTE: While the drawing is 'highlighted' it is previewed in a graphic window to the right of the Select File dialog box (see above)

An **AutoCAD** session will start up with the selected drawing displayed (see next page)


AutoCAD Map 2000
File Edit View Insert Format Tools Draw Dimension Modify Window Map Help
31n03w
AutoCAD - Command Line - 31n03w
Command: Specify opposite corner: *Cancel*
Command:
259561.47
Start
Microsoft Word - Ope...
AutoCAD Map 20...
untitled - Paint
Exploring - (C:)
MSN.COM - Microsof...
SnagIt/32
9:52 AM

Procedures to wblock out section drawing files from the GCDB

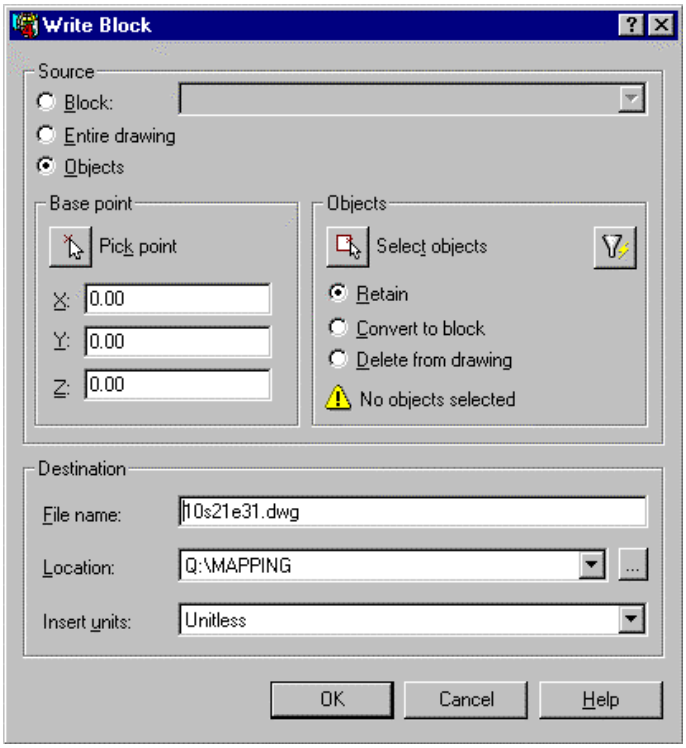
First, **Open…** the GCDB drawing (***.dwg***) file and window in on the area to be blocked out.

Next, at the command prompt type in **wblock** and <enter>

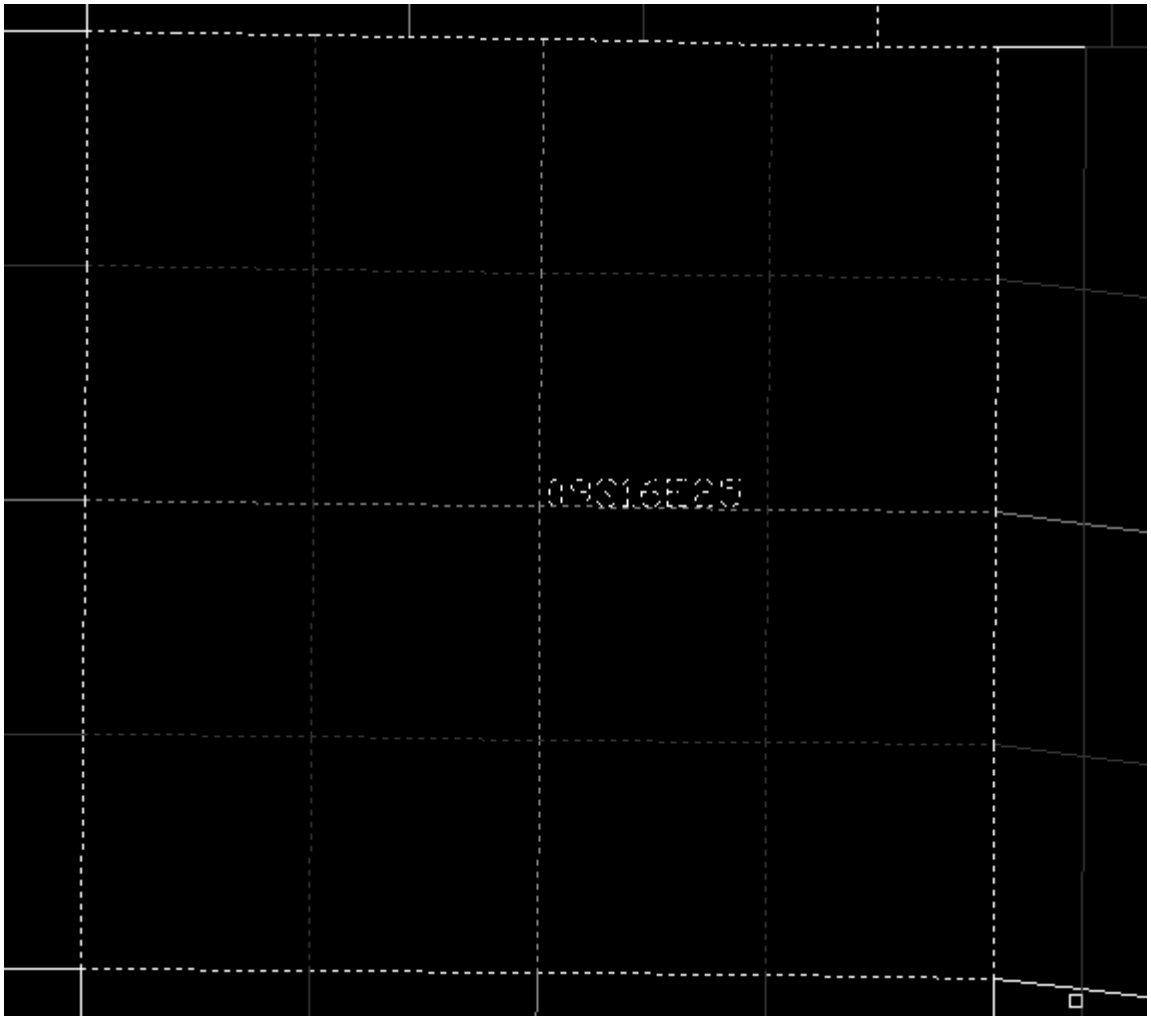
Command:**wblock**

In the **Write Block** dialog box enter a **File name:**

In the example below the drawing name is ***10s21e31***



Next, 'click' the **Select objects** button and use the cursor to define a window to select those lines that represent the section to be blocked. First place the cursor at a point just beyond the NW corner of the desired section and 'left-click'. Define a second point just beyond the SE corner of the section and 'left-click' again. The selected entities will appear 'dashed' (see next page)



Right-click' (or enter) to return to the **Write Block** dialog box (see above)

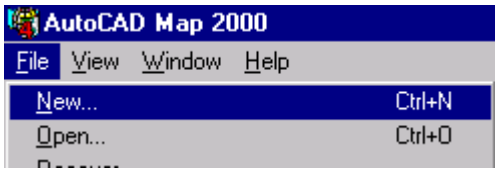
Next, simply 'click' the **OK** button

In the preceding example an AutoCAD drawing (.**dwg**) file named **10s21e31** was created and saved to a server a **Q:\MAPPING**

To Save that file to another location **Open…**the drawing a **Q:\MAPPING** and perform a **Save As…**to the proper folder

Converting .dxf (e.g., drawing exchange format) files to AutoCAD .dwg files

Start a **New…** drawing **File** (see below)

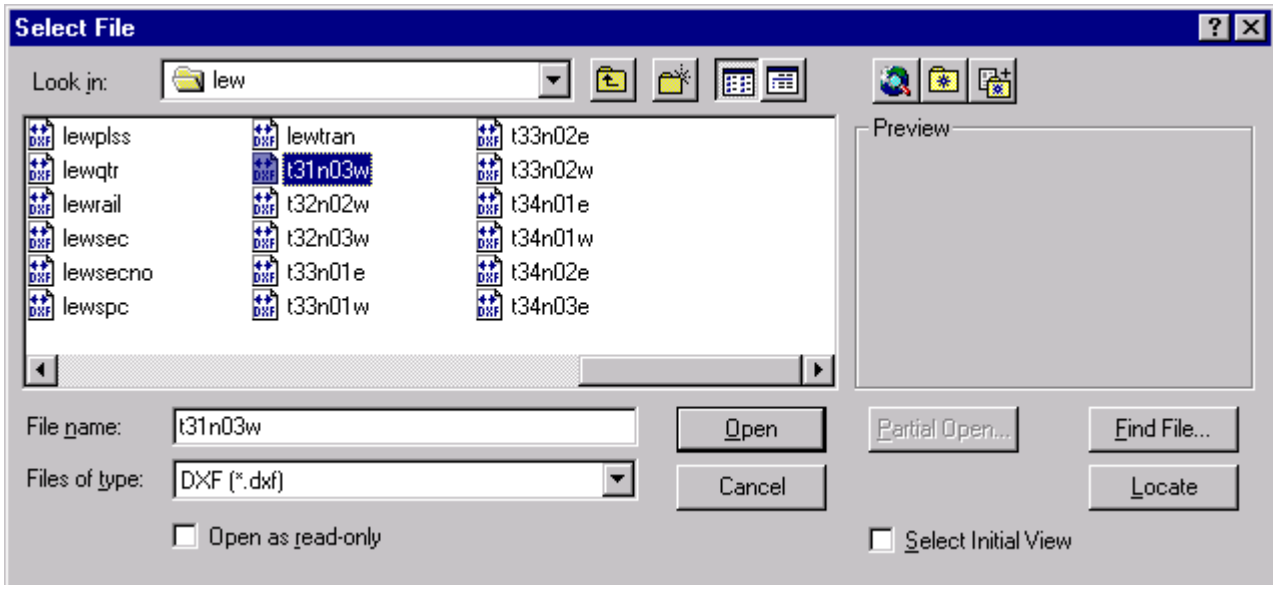


Next, at the command prompt type **dxfin** and <enter>

Command:**dxfin** <enter>

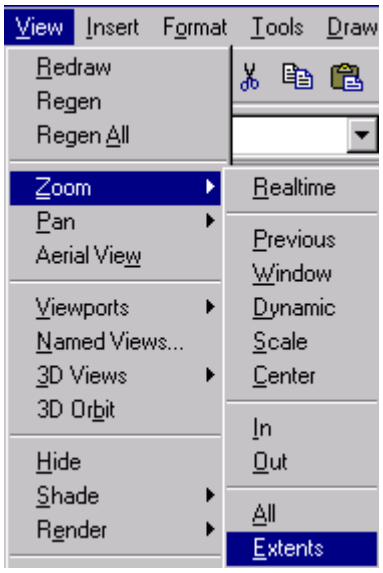
Next, in the Select File dialog box Browse to the folder where the ***.dxf*** file(s) reside and select the appropriate file name.

NOTE: Be sure that the **List Files of Type:** option is set to **DXF (*.DXF)**. To change this setting 'click' the  icon and scroll to the desired option.



Then, simply 'double-click' the appropriate file name or 'highlight' the file name and 'click' **Open**

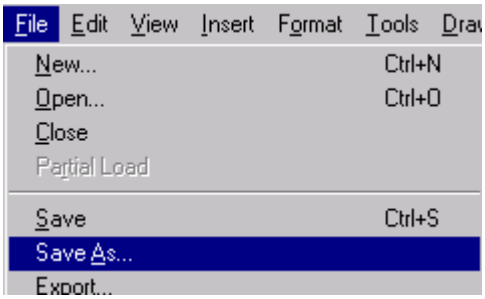
NOTE: If the image does not appear immediately following the command simply perform a Zoom Extents to display the contents of the ***.dxf*** file



NOTE: Most versions of AutoCAD and/or Map will NOT automatically generate an AutoCAD drawing (***.dwg***) file from the ***.dxf*** file. To Save the file as an AutoCAD drawing (see "Saving an AutoCAD drawing (*.dwg*) file")

Saving an AutoCAD drawing (*.dwg*) file

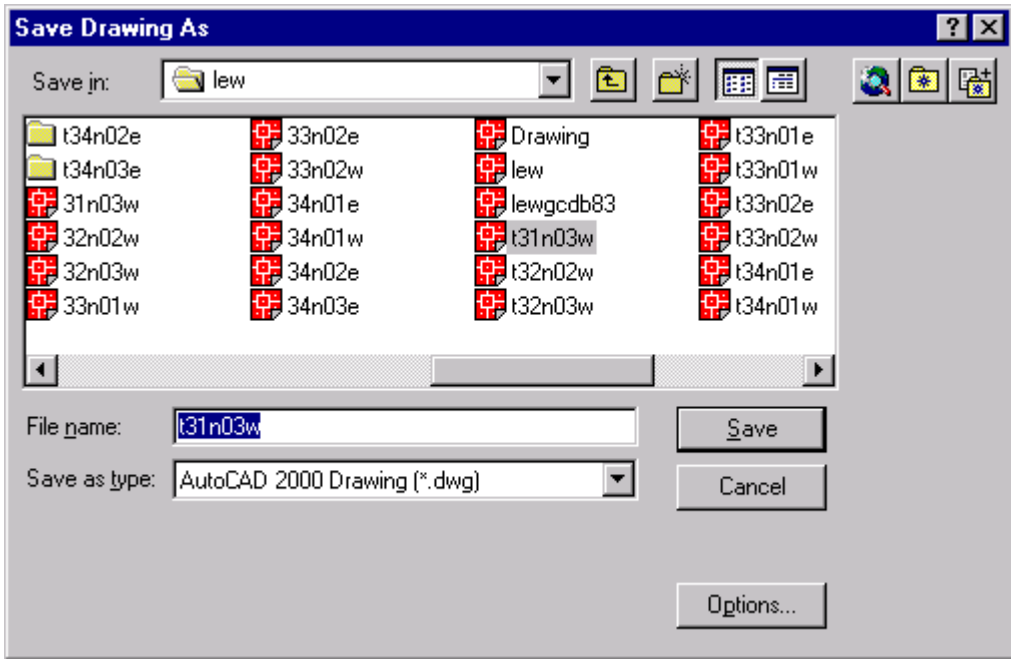
Under **File** choose **Save As...**



Then, from the **Save Drawing As** dialog box navigate to the proper folder and type in the name of the ***.dwg*** file to be saved.

Type in a **File name:** and 'click' **Save** (see below)

It is good practice to save the ***.dwg*** under the same name as the original ***.dxf***.



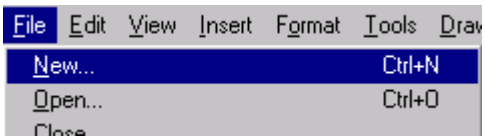
In the preceding example a file named ***t31n03w*** was saved to a folder named ***lew***.

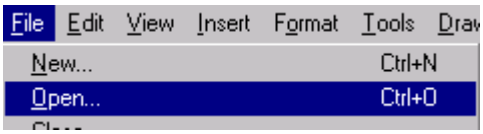
Procedures to convert parcel template (*.dwt*) into a drawing file (*.dwg*) and Insert into an existing drawing file.

Many counties had already started CAD based mapping systems prior to the development of the Parcel Layering Template.

These procedures illustrate how to insert the template into existing drawings.

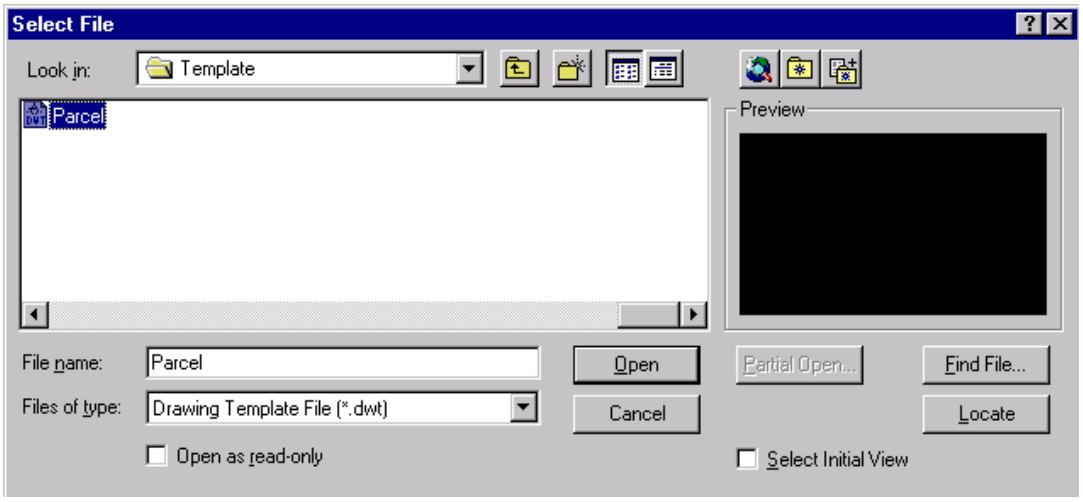
Begin a **New…** drawing





Open… the ***parcel.dwt*** file (which should be located in the AutoCAD template folder as shown below)

NOTE: Be sure that **Files of type:** is set to Drawing Template File (*.dwt)

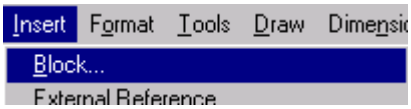


Next, **Save As…** an AutoCAD drawing (***.dwg***) file named ***parcel.dwg*** to the template folder

NOTE: Be sure that **Files of type:** is set to .dwg

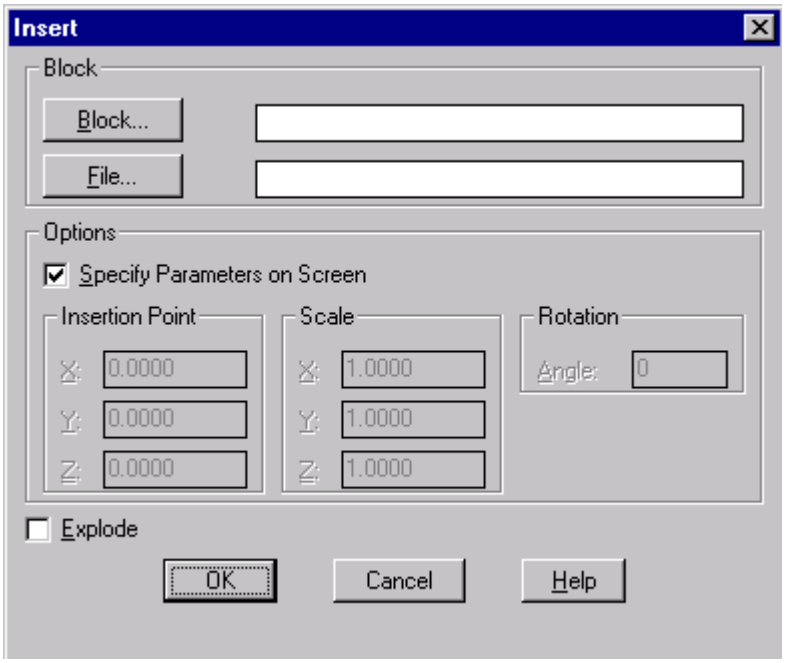
Procedures to insert *parcel.dwg* into an existing drawing file

With an active drawing open from the **Draw** menu select **Insert Block...**

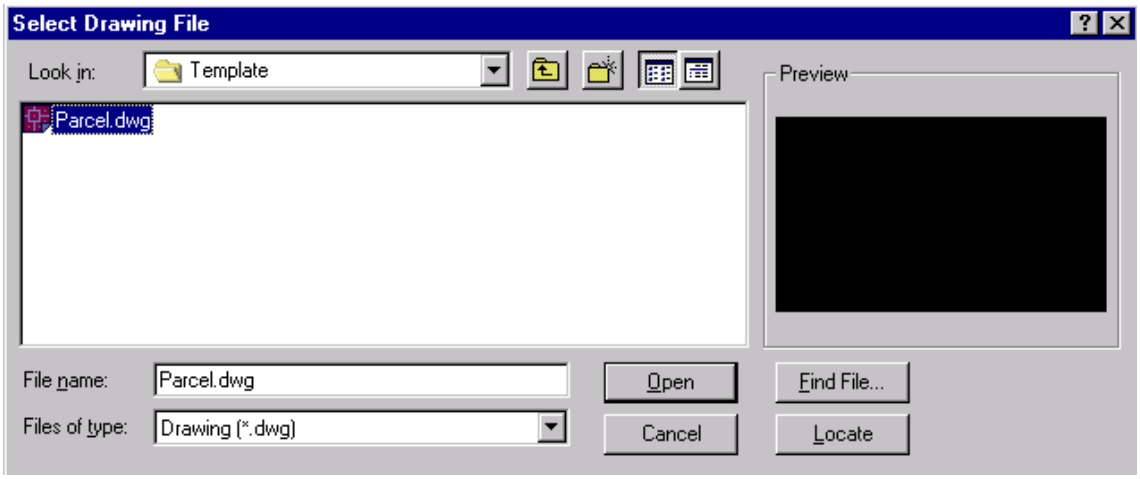


NOTE: The following graphic was generated using AutoCAD Map 2.0

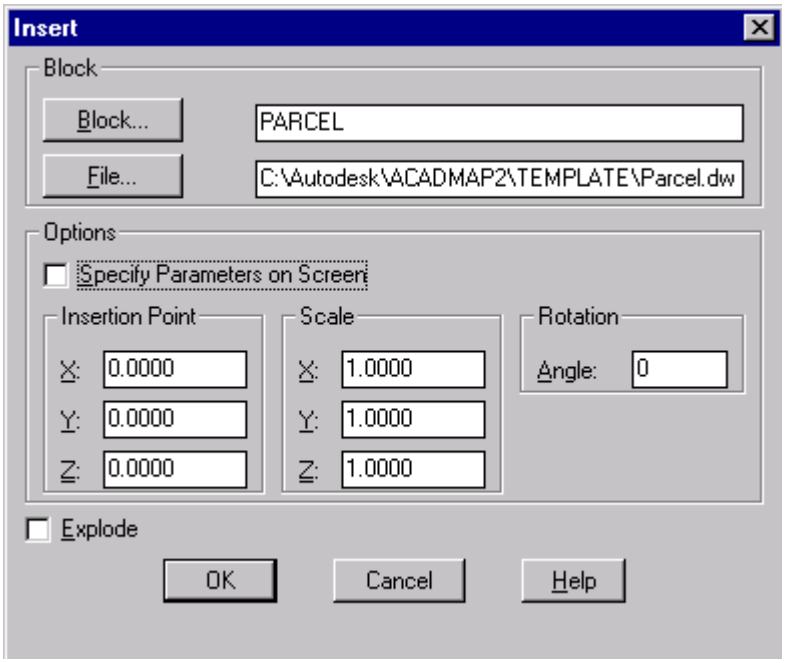
Next, from the **Insert** dialog box 'click' the **File...** button.



Next, navigate to the autodesk template folder (located at C:\program Files\Autodesk\acadmap<Ver. No.>\template) and select ***parcel.dwg***



When back at the Insert dialog box ‘uncheck’ the Specify Parameters on Screen option (see below)



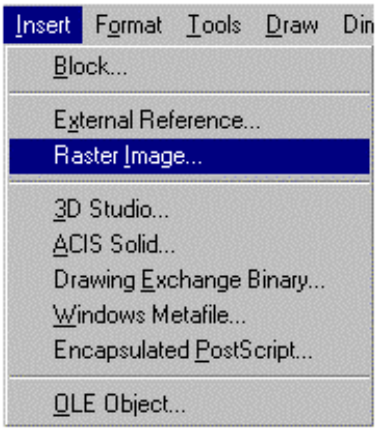
Lastly, ‘click’ **OK**

All of the layers and other settings associated with template will be incorporated into the current drawing

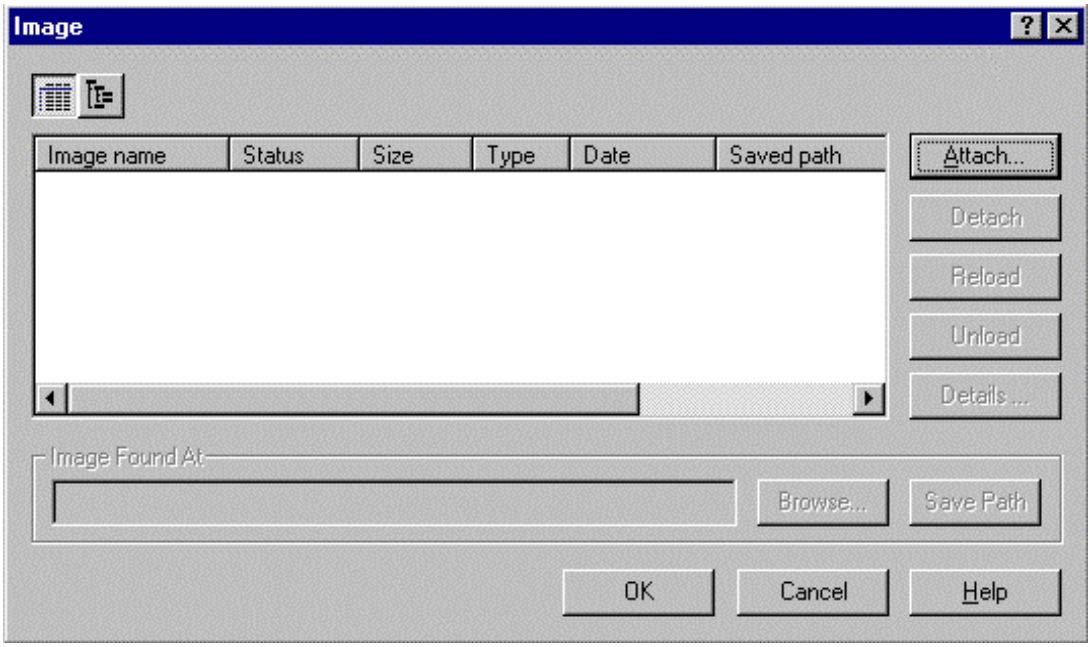
NOTE: AutoCAD 2000 (i.e., 4.0) looks for only ***.dwg*** or ***.dxf*** files

Procedures to 'heads-up' digitize over scanned imagery

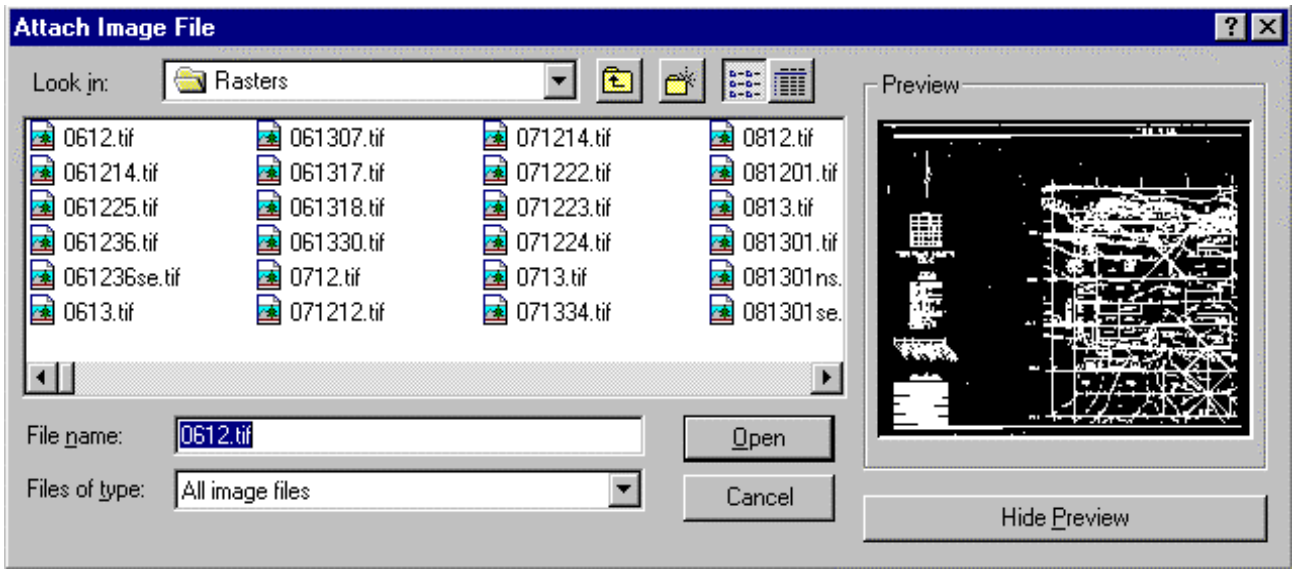
To open an image in AutoCAD Map from the **Insert** menu select **Raster Image…**



Next, from the **Image** dialog box 'click' the **Attach…** button



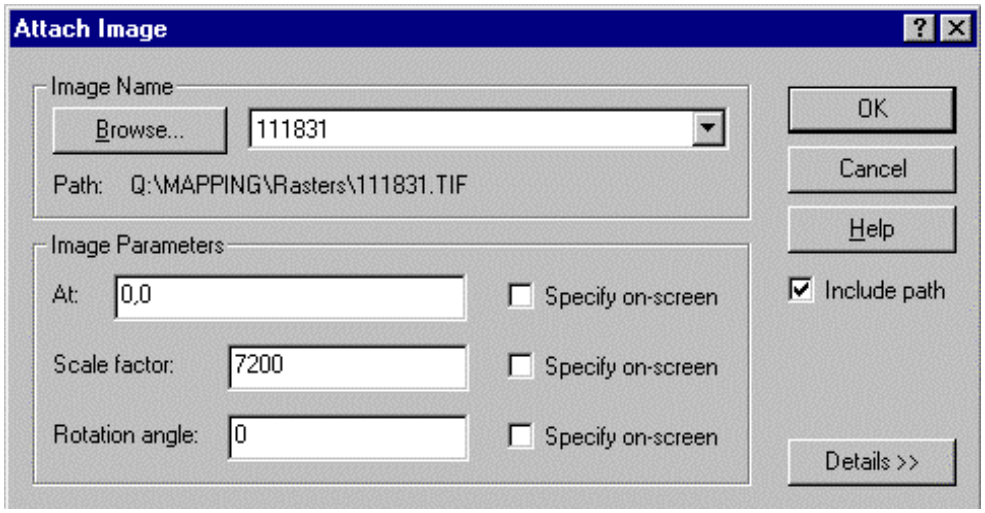
Browse the **Attach Image File** dialog box and 'double-click' on the appropriate image file. In this example the user is opening a tagged image file (i.e, ***.tif***) named ***0612.tif*** (see next page)



Next, Save the file to the appropriate file folder. The file name cannot be the same as the control file drawing (i.e., gcdb or section data) or you will over-write that file. Simply Save the file to the same folder and place an 'I' (for image) at the beginning of the file name.

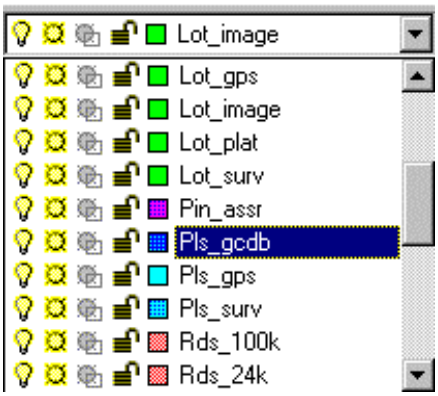
> NOTE: The image files are NOT currently referenced to any 'real-world' coordinate system. The image must be scaled to represent those coordinates. In the following example the user will digitize over an image scanned from a map originally drafted at a scale of 1 inch = 200 feet. That means that every inch of the original drawing represents 200 feet in the 'real world'. That map measures 36 inches in width. In order to model what that map represents on the ground the user must enlarge the image a factor of 7200 (36" map X the map scale of 200 = 7200). Likewise, an image from a 36" wide map drawn at 1" = 100 ft. would be scaled by a factor of 3600 (or 36 x 100).

From the **Attach Image** dialog box disable all of the Specify on-screen checkboxes and enter the appropriate Scale factor: in the box (see below)



Next, set the current layer from the parcel layering template (***parcel.dwt***) provided by the Idaho State Tax Commission to represent the features that are to captured (or traced)

To do so from the menu simply scroll the list of layers and 'left-click' on the desired layer. In this example the user has set the layer named ***Pls_gcdb*** as the current layer (see below).



With the current layer set the user is ready to begin digitizing. The first step in digitizing over the imagery is to establish a window around the area to be traced.

To begin drawing a line from the **Draw** menu select **Line**

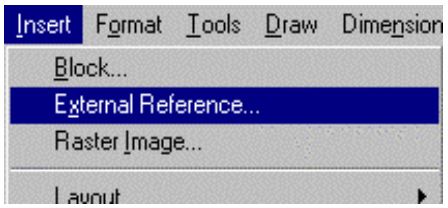
Use the left mouse button to set the first point. To set another point simply 'click' left. To end a line 'right-click'.

The user may interrupt the draw command to **Pan** and/or **Zoom** around the drawing. While in the draw mode simply 'click' the desired **View** command to **Pan** or **Zoom**.

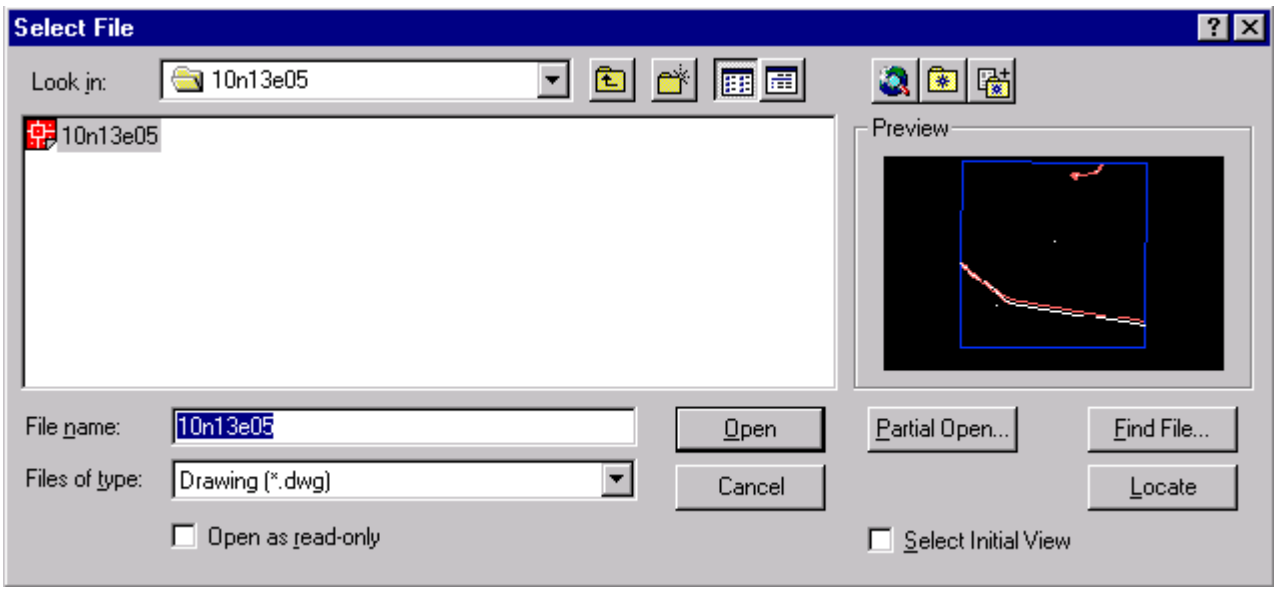
Procedures to reference vector files to control (i.e., GCDB) files

First, **Open…** the control (i.e., file extracted from the GCDB or other control data) and **Insert** the drawing to be referenced. In this example, a file that was generated by 'heads-up' digitizing over scanned imagery.

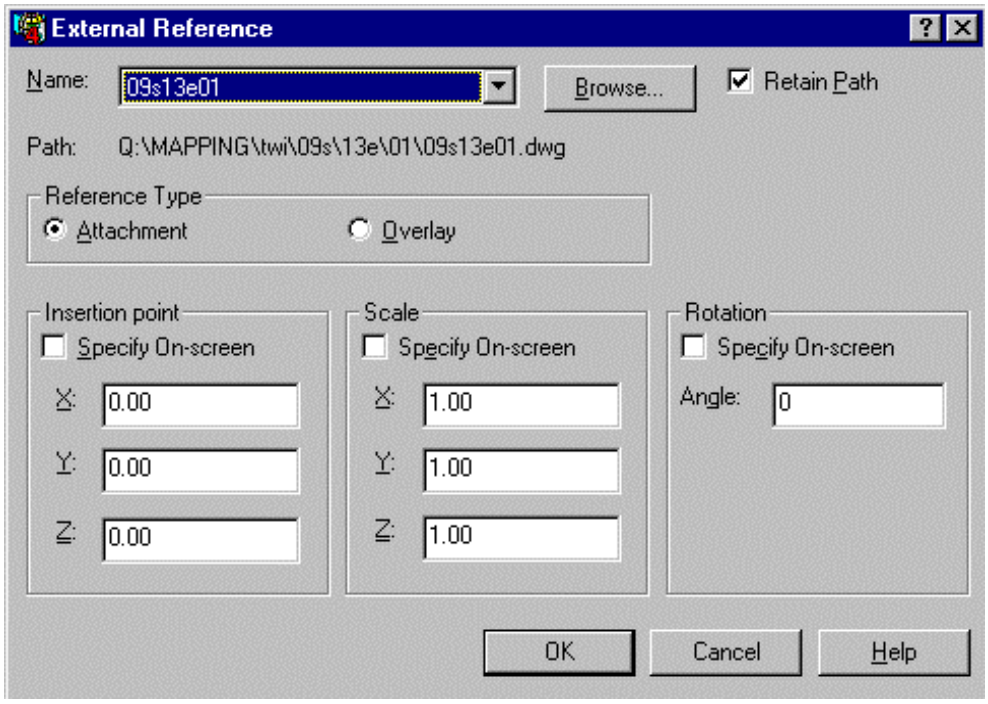
Next, Attach the control or GCDB drawing file. From the **Insert** menu select **External Reference…**



From the **Select Reference File** dialog box choose the appropriate reference file



Next, from the **External Reference** dialog box make sure that both the **Specify On-screen** checkboxes (one for **Insertion point** and one for **Scale**) have be deactivated and the 'click' **OK**



After attaching the Xref **Zoom Extents**

The current drawing and the attached control file will appear some distance apart.

The user will use the **Move** command to move the digitized vectors to the attached control drawing. Use the cursor to define a box to select the entities from the current drawing.

NOTE: It may take a couple of times depending on how far apart the two drawing are.

When both files display reasonably close together the user can use the object select tools to specify an exact **base point** (a user-defined point that has a corresponding equivalent on the control drawing. To maintain continuity use the SW corner of the section whenever possible.

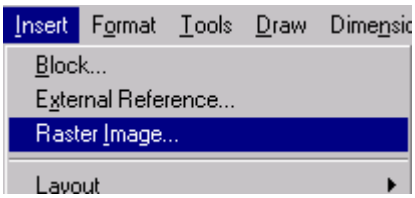
The user is then prompted to enter a **second point of displacement** (on the attached control drawing). Again, use the SW corner whenever possible.

Zoom Extents again

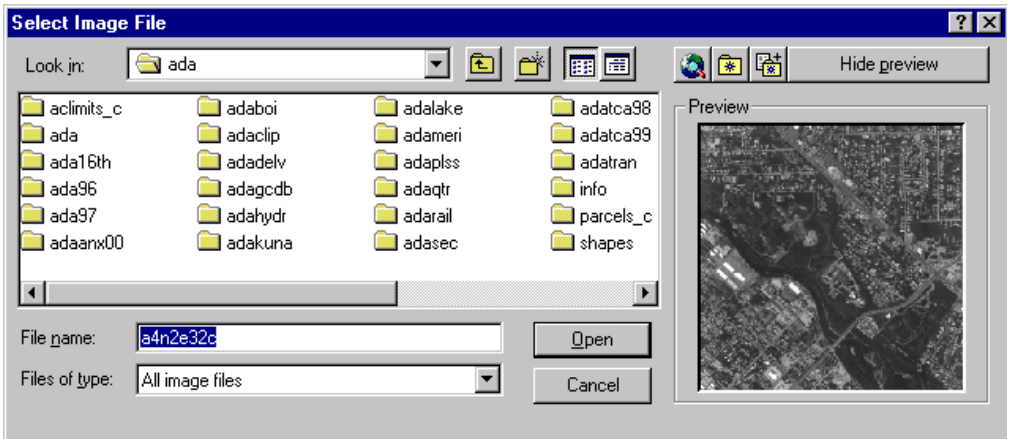
Inserting an image file

NOTE: **AutoCAD LT** does NOT support image (i.e., raster) data

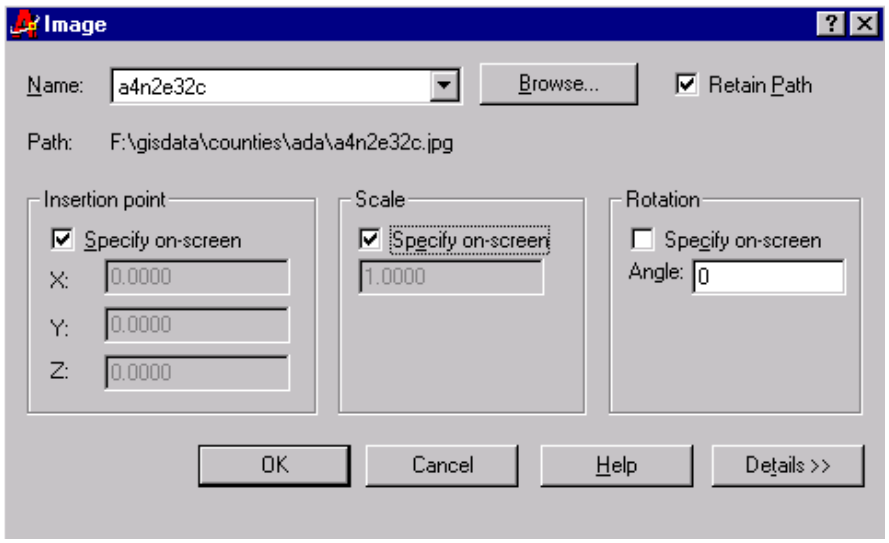
From the **Insert** menu select **Raster Image…** (see below)



Next, from the Select Image File browse until the desired image file is located. In the following example, an aerial photograph representing section 32 of township 4 north, range 2 east has been converted to a raster based ***jpeg*** (i.e., ***.jpg***) image file has been selected. (see below)

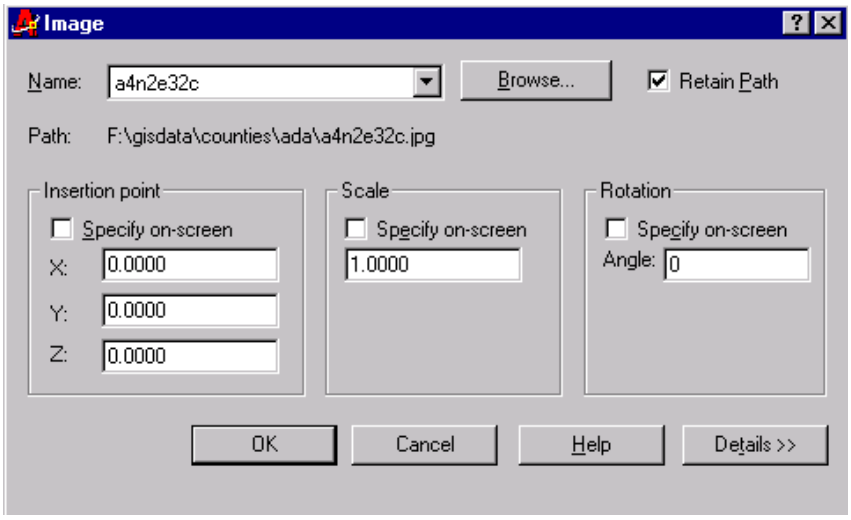


An **Image** dialog box will appear (see below)

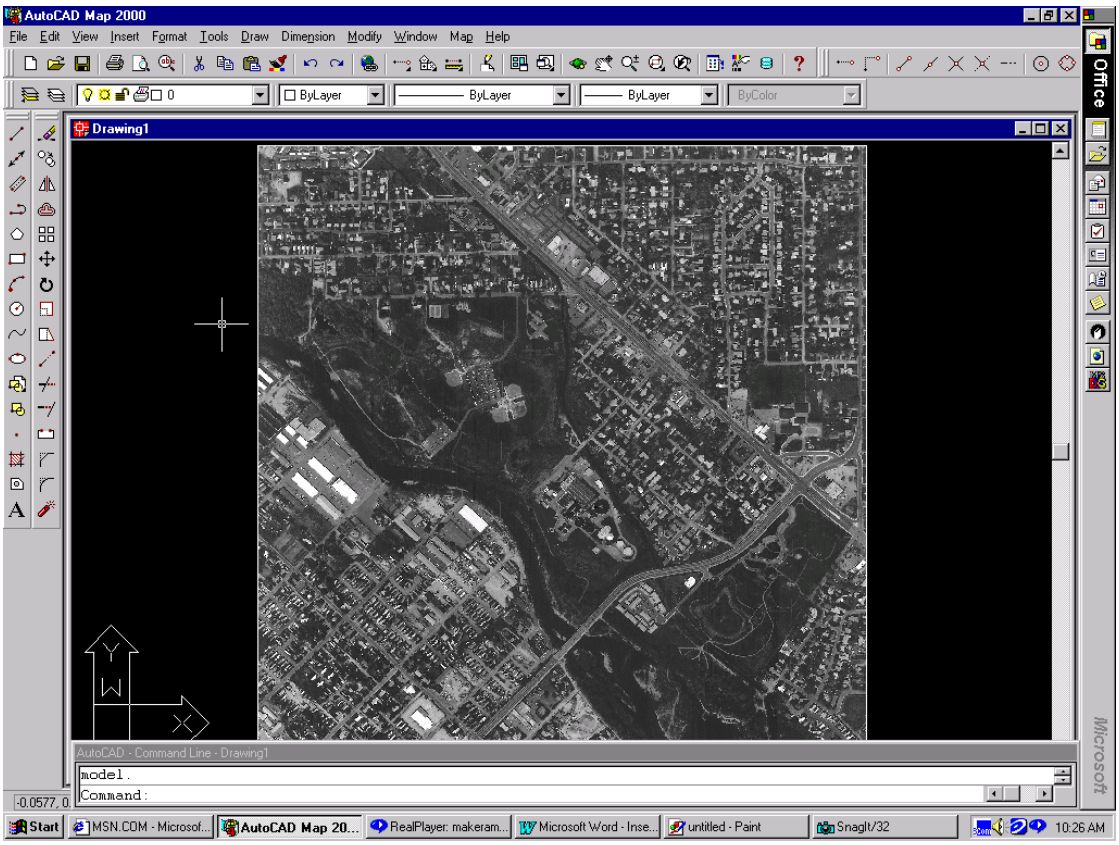


There are a number of options available from the Image dialog box. In this case, the user will insert the image at a scale of 1:1 using 0,0 as an insertion point with no rotation.

To do so uncheck the **Specify on-screen** options below Insertion point, Scale and Rotation (see below)



'Click' **OK** and then perform a **Zoom Extents** to **View** the entire image (see below)



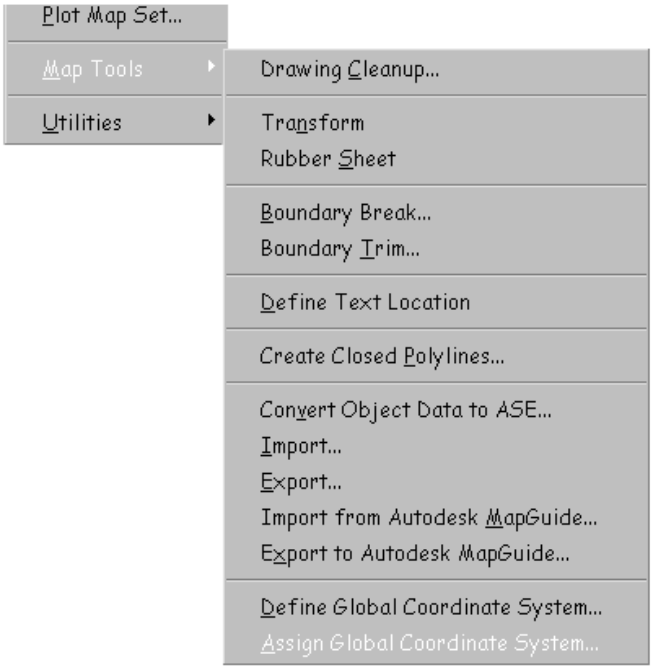
Procedures to project AutoCAD Map drawing (*.dwg*) files

The user must first know what projection the current files are in. The Idaho State Tax Commission delivers base data to counties in Idaho State Plane Coordinates North American Datum 1983 (ISPC NAD83). The user must first assign that projection to the source drawing file that is to be projected.

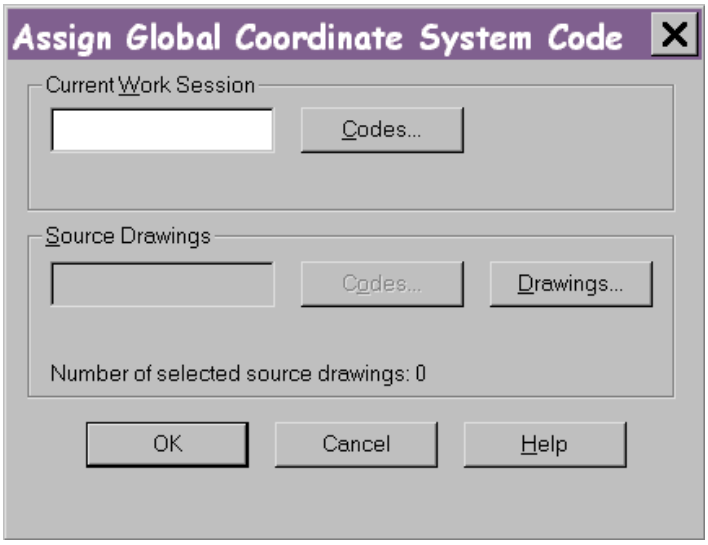
To do so begin a **New…** Map session and attach the source drawing

From the **Map** menu select **Map Tools** (see below)

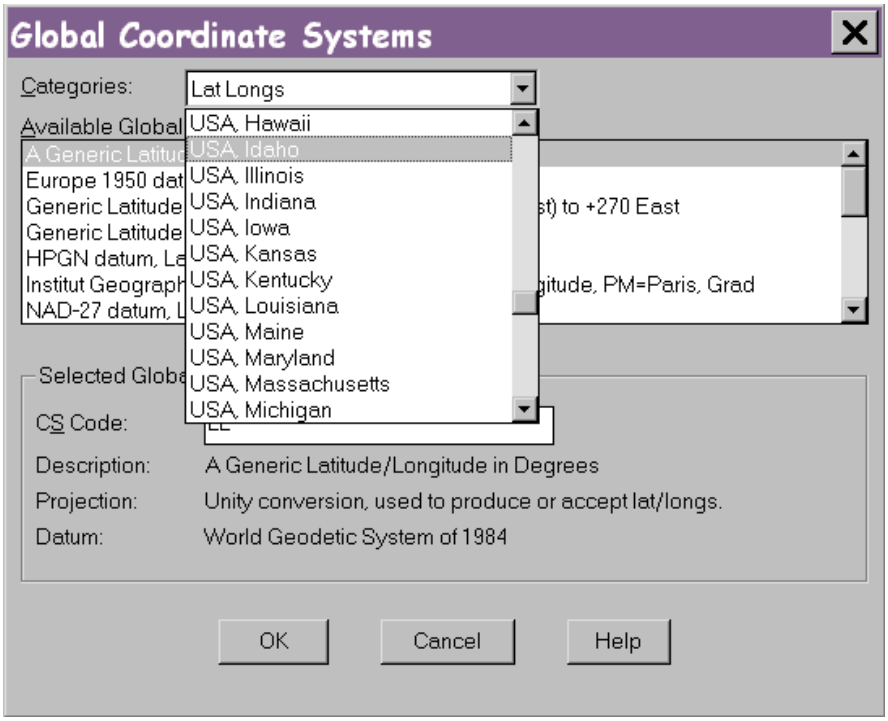
Next, select **Assign Global Coordinate System…**



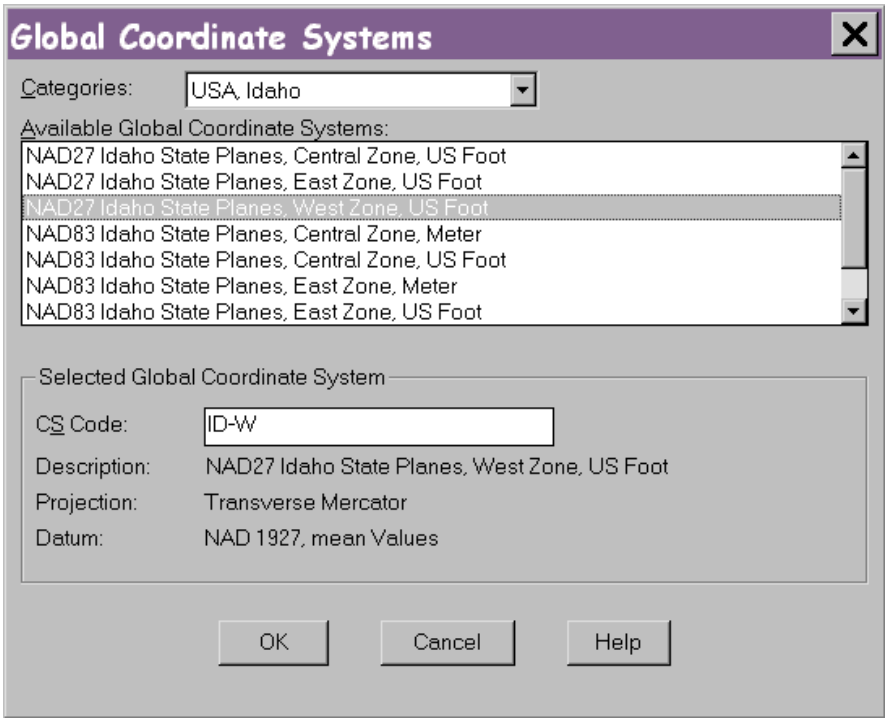
From the **Assign Global Coordinate System Code** dialog box 'click' the **Drawings…** button (see below)



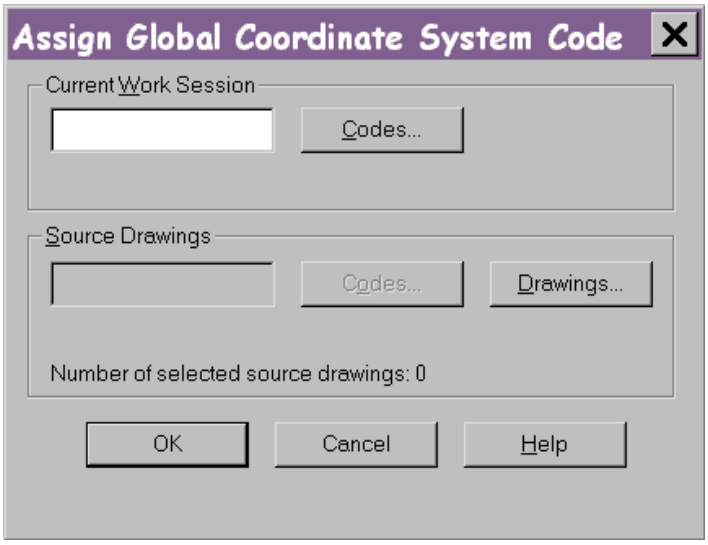
Next, from the **Global Coordinate Systems** dialog box scroll the **Categories:** list and 'highlight' the known system (in this case USA,Idaho)



Then select the desired units of measurement and datum (in this example Idaho State Plane, NAD27 in feet). See next page.



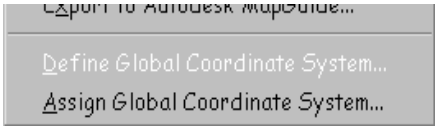
'Click' **OK** and OK again at the **Assign Global Coordinate System Code** (see below)



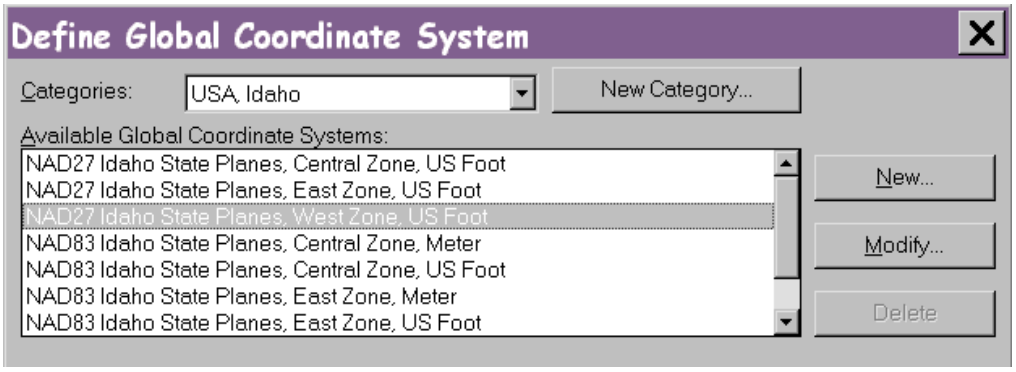
Next, detach the source drawing file from the session

Now, the user can define a coordinate system for the session (as opposed to a source drawing)

To do so, again from the **Map** menu select **Map Tools** select **Define Global Coordinate System…** (see below)



In this exercise the coordinate system will be defined Idaho State Plane, NAD27 in feet

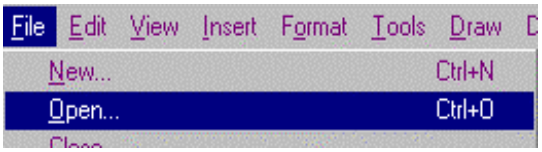


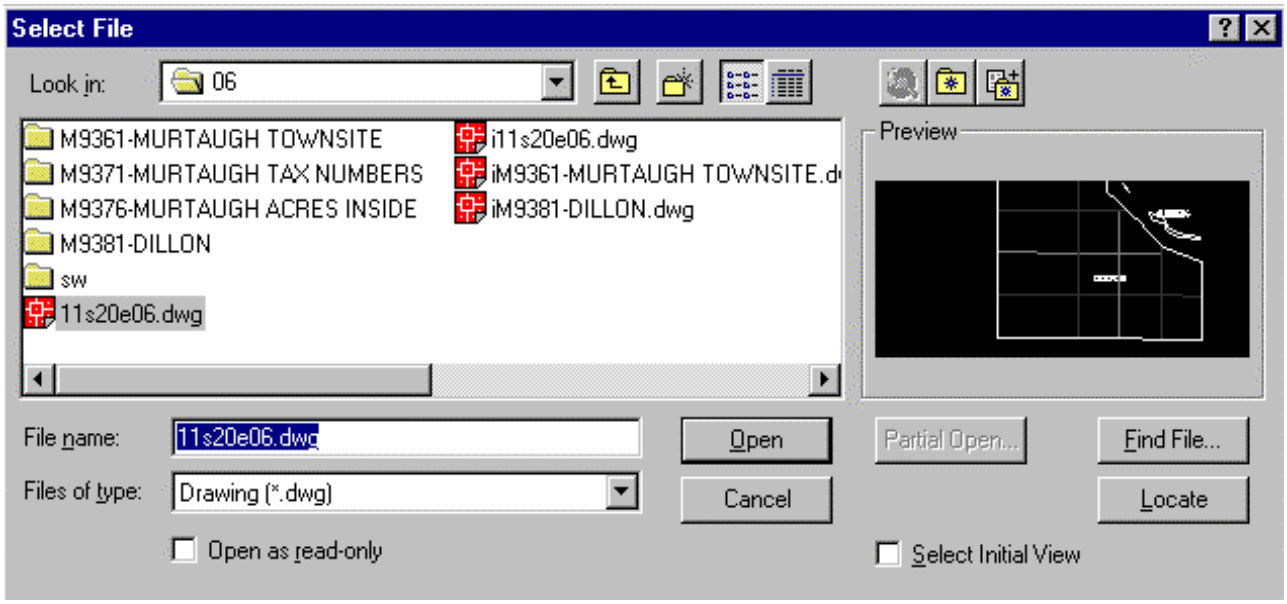
Save the session to the proper folder

The user can now attach source drawing files (with assigned projections) into the currently defined projection system (Idaho State Plane NAD27 in feet)

Inserting an AutoCAD drawing file into an existing AutoCAD control (i.e., GCDB) drawing

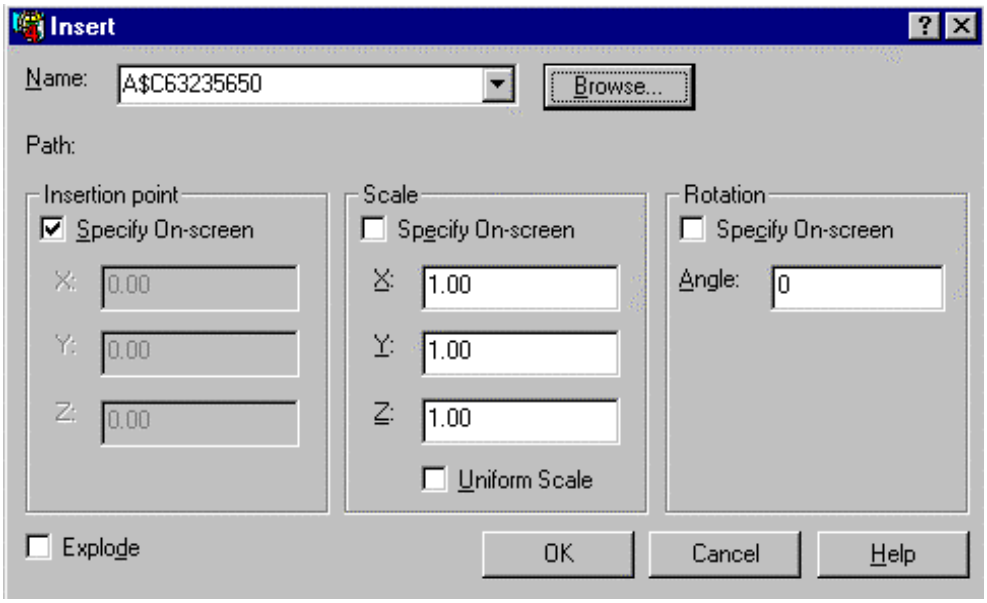
First, **Open…** the existing control file drawing. In this example the user will **Open…** and select the drawing ***11s20e06.dwg***



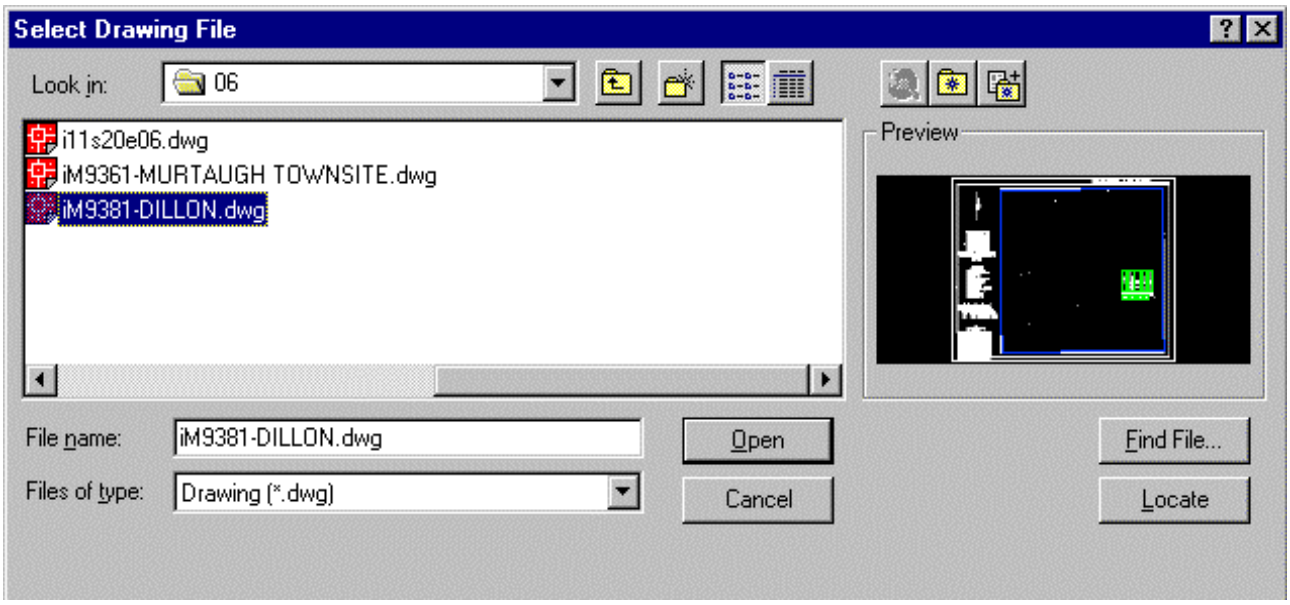


Next, from the **Insert** menu select **Block…** (see below)

In the **Insert** dialog box **Browse…** to find the drawing that is to be inserted (see below)

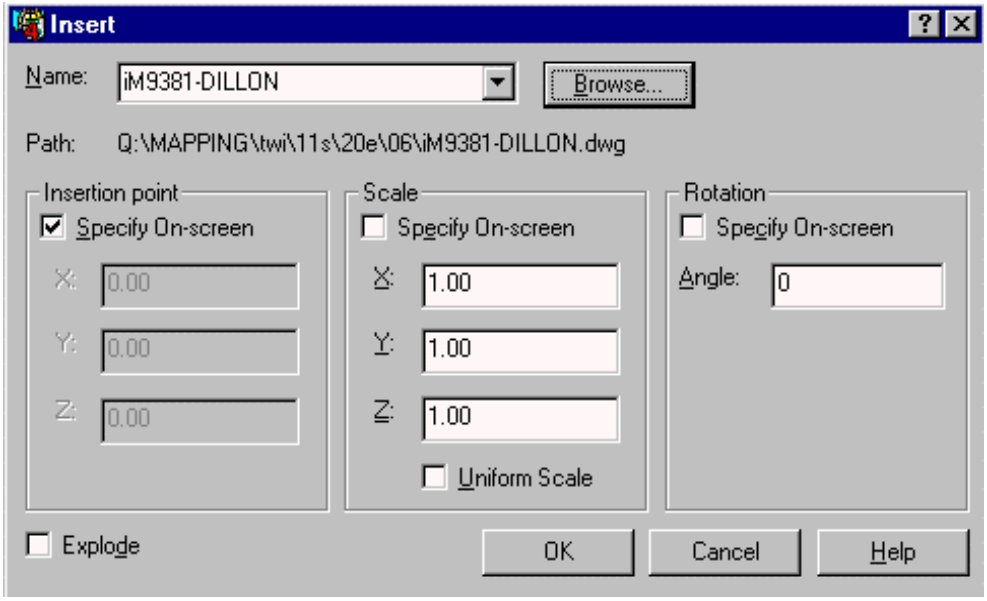


In this example the user is inserting a drawing file named ***iM9381-DILLON.dwg*** (see below)



NOTE: In the above example the drawing being inserted has an image attached. If you are using Map the user can detach the image from the current session. See “Detaching an Image”

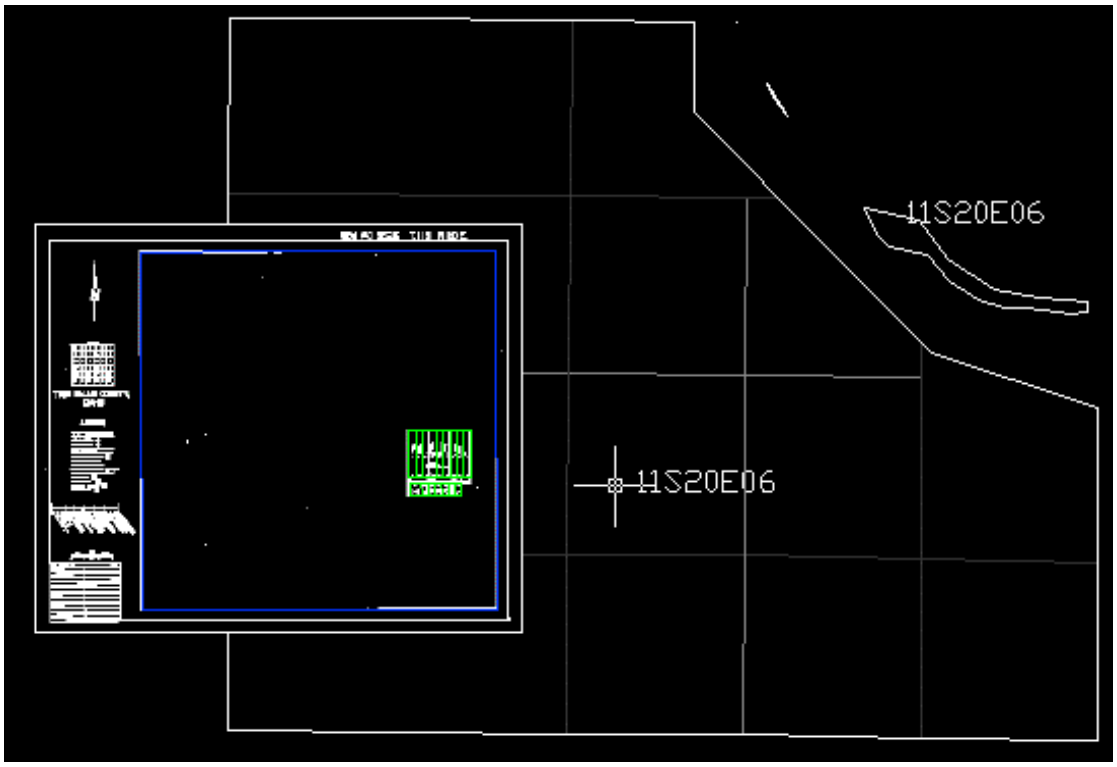
After selecting the file to be inserted an **Insert** dialog box will appear (see below)



If the **Insertion point Specify On-screen** option is enabled the user can simply use the mouse to visually select a point at which to insert the drawing.

The insertion point refers to the lower left coordinates of the drawing being inserted (see below)

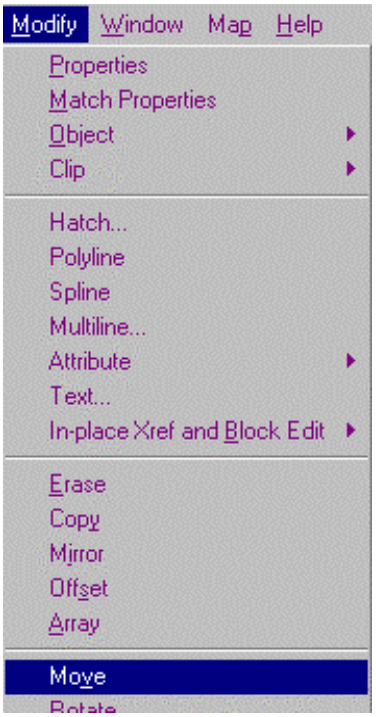
To complete the command simply ‘left-click’ at the desired location and the drawing is inserted (see below)



Procedures to move (i.e., reference) a drawing file (or block)

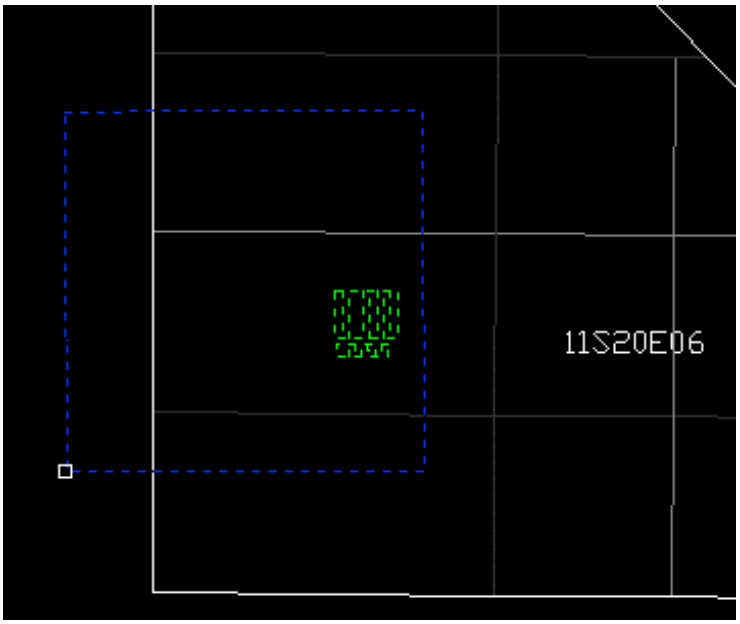
After initially inserting the drawing file it becomes an AutoCAD drawing block. This allows the user to treat that file as a single entity as opposed to a drawing composed of a number of separate entities (or lines, etc.)

To **Move** the block from the **Modify** menu select **Move** (see below)



The user is then prompted to **Select objects:**

To do so simply use the cursor and 'click' on any portion of the block (i.e., drawing file) to be moved. Again, because it is a block all lines created in that file will be selected. The block will appear 'dashed' when selected (see below)



After selecting the block ‘right-click’ (or <enter>) to accept the selected object(s)

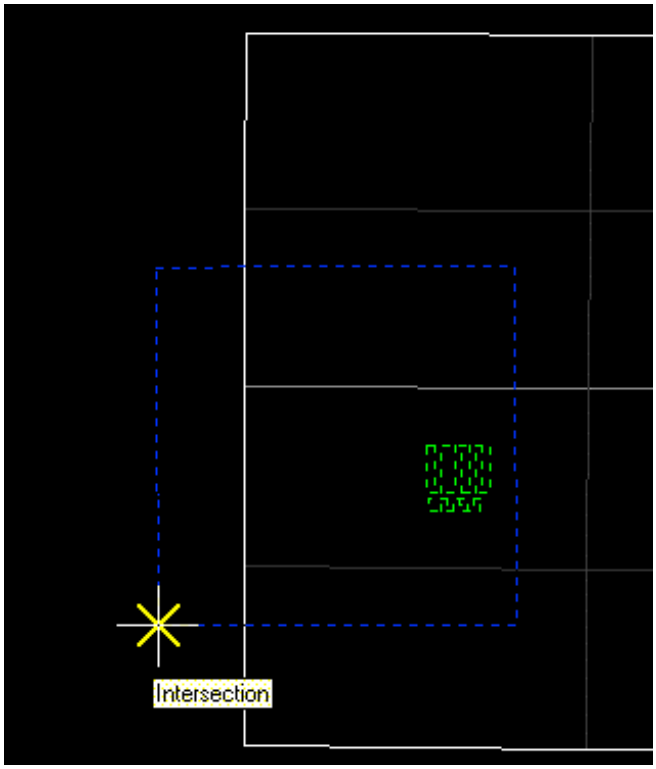
The user is then prompted to **Specify base point or displacement:**

Use one of the available Object Snap options to define a point on the block that has a common point to which to reference on the control drawing. In this case the user will use the lines intersecting to form the SW corner of the block (see below)

To use the Snap to Intersection option ‘left-click’ the icon pictured below (It is located on the Object Snap toolbar **(see “Loading the Object Snap Toolbar”)**

Snap to Intersection

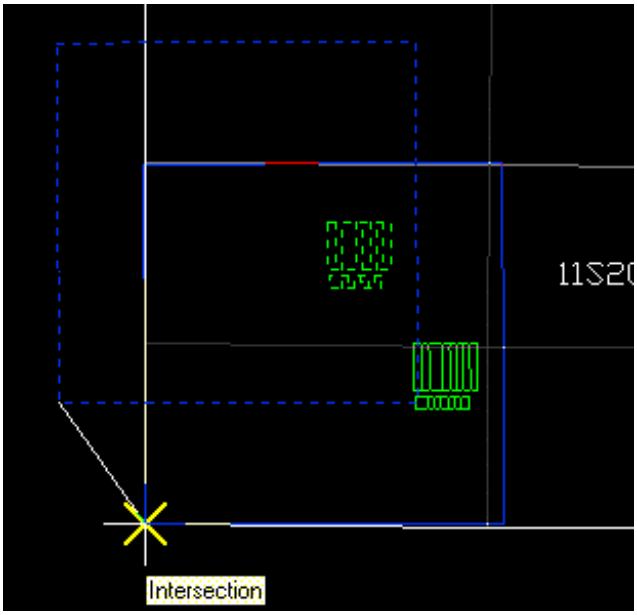
Then move the cursor box to the intersection of the two lines forming the SW corner of the selected block. A yellow ‘X’ will appear indicating that the intersection has been located (see below)



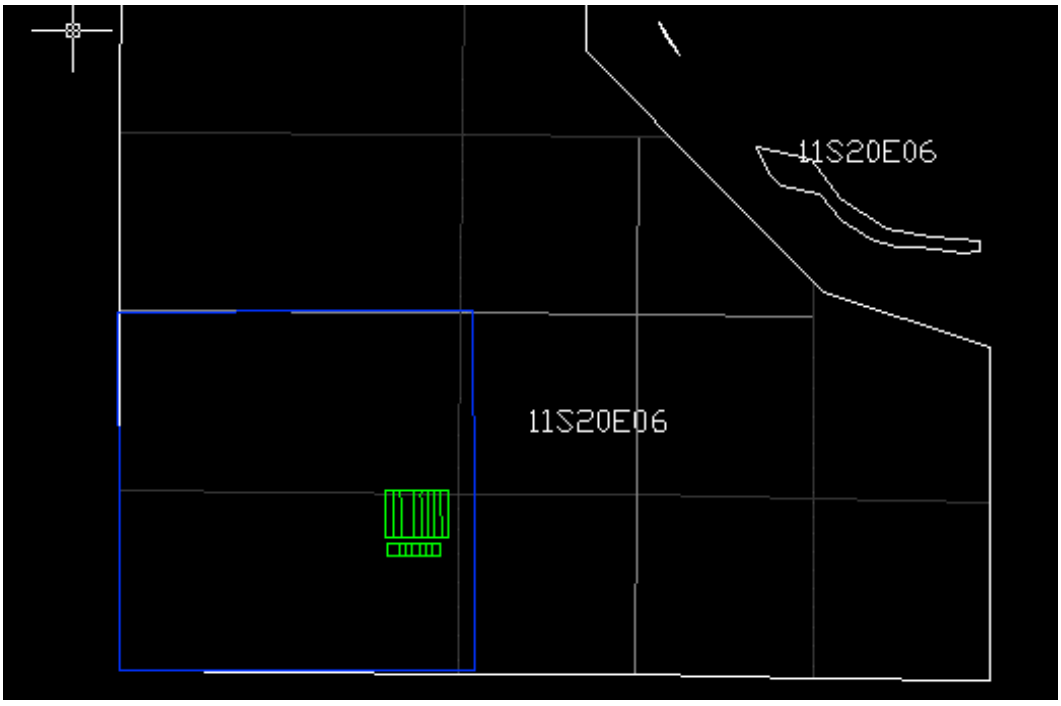
‘Left-click’ while the yellow ‘X’ is displaying

The user is then prompted to Specify second point of displacement or <use first point as displacement>:

Again, use the Snap to Intersection option (see previous step) to select that point on the control file that is common with the block (see below)

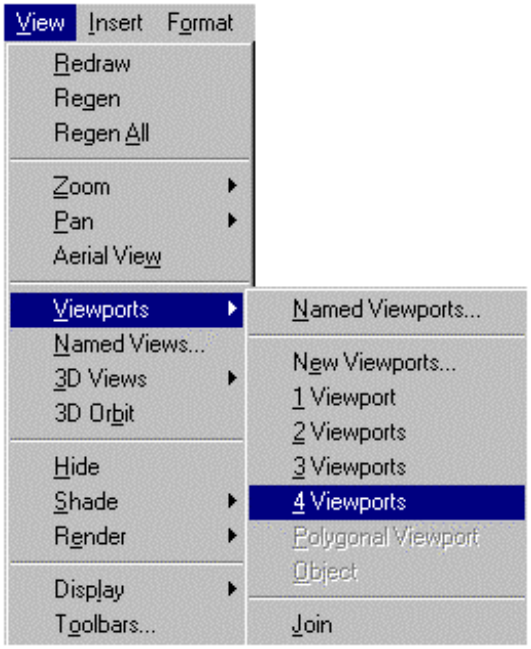


'Left-click' to complete the command. The results of this example are pictured below

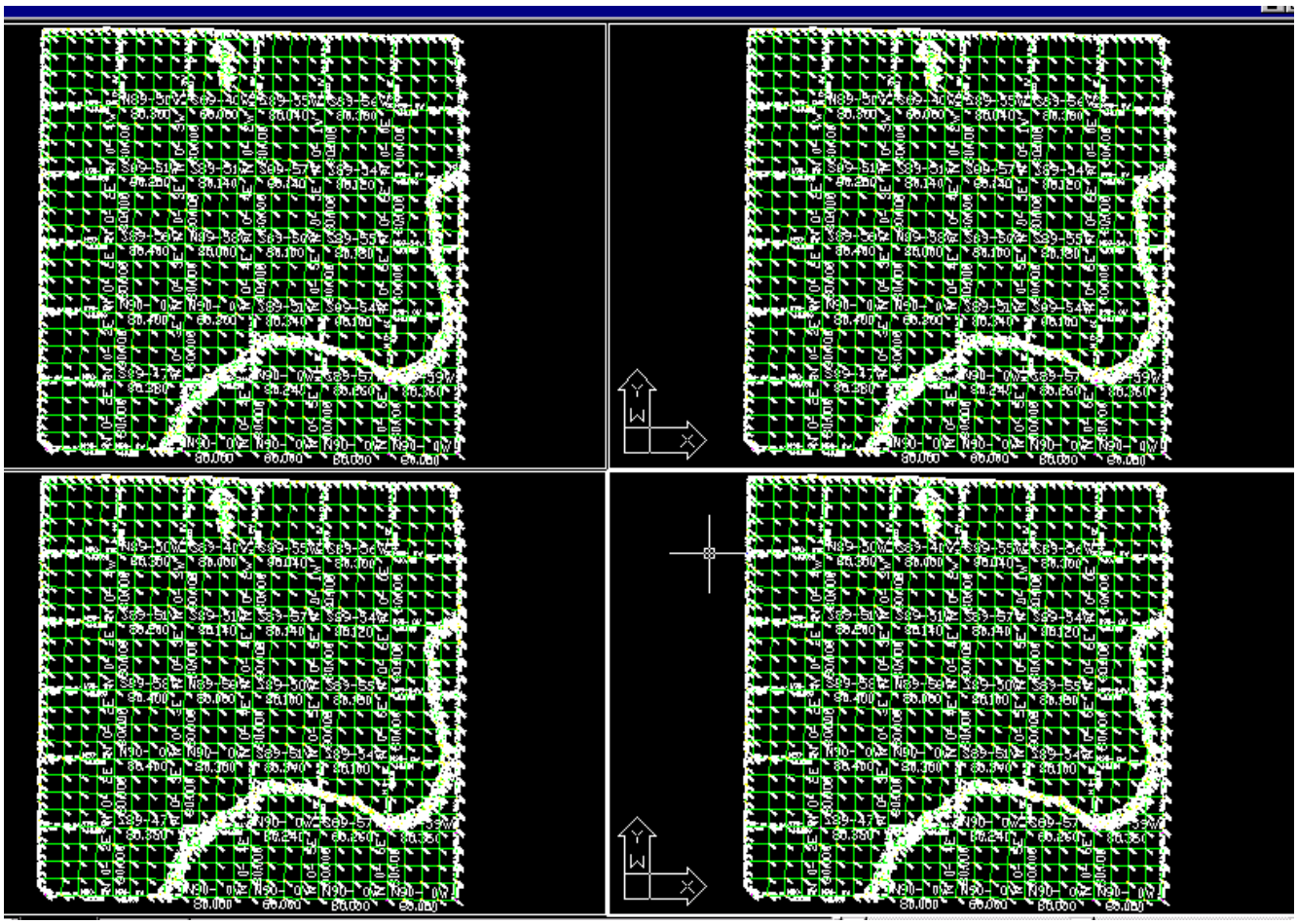


Creating Multiple Viewports

From the **View** menu select **Viewports** followed by **4 Viewports** (see below)

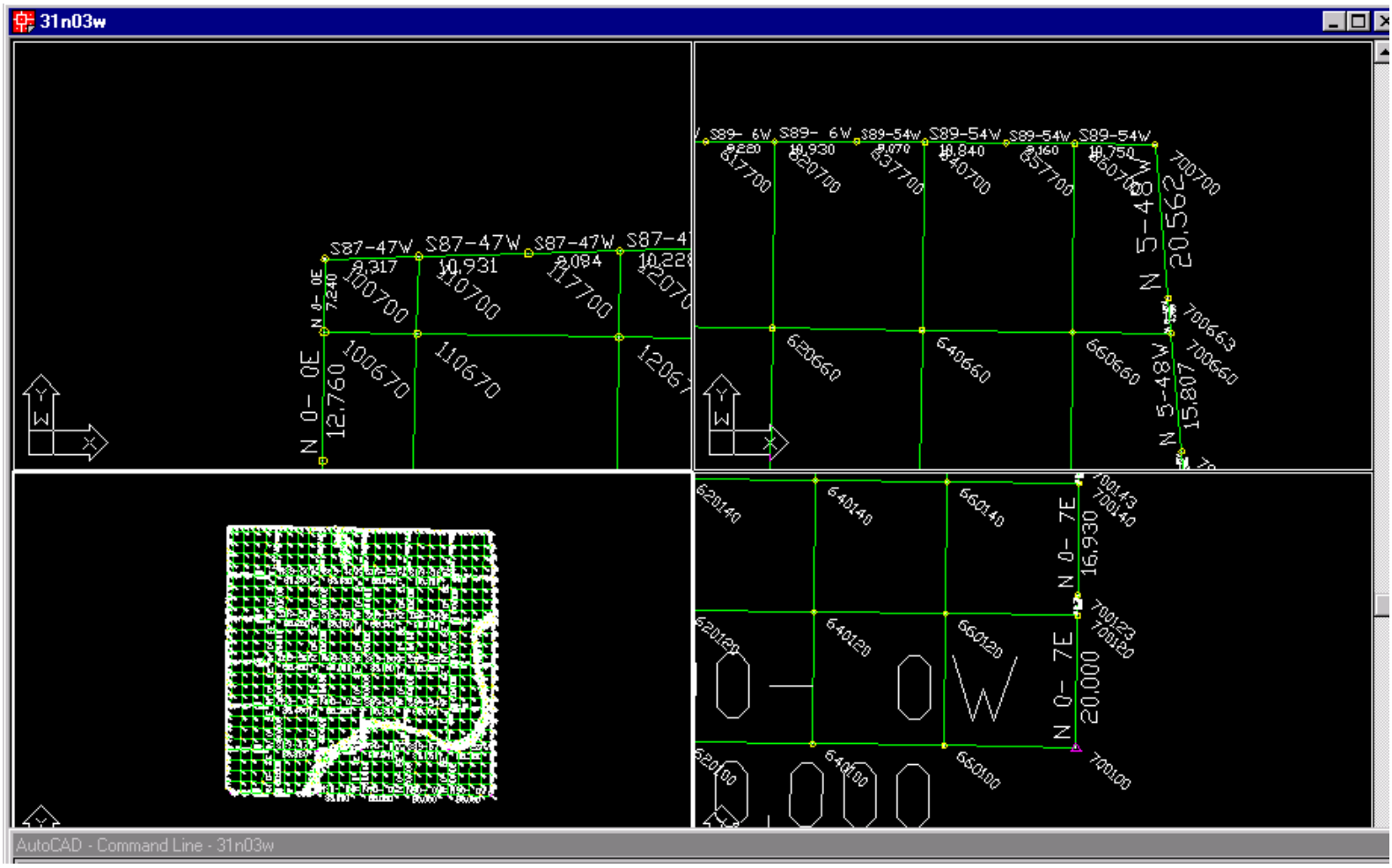


This will 'break' the display into 4 individual displays (see below)



NOTE: To activate a particular window simply ‘left-click’ somewhere within that window. The border of that display window will appear ‘highlighted’ or bold. In the example on the preceding page the SE viewport is the active window. Any edit performed will be in that viewport.

The user can then use the NW (upper left) display window (i.e., viewport) to **Zoom** around the NW corner of the drawing, the NE (upper right) display the NE corner of the section drawing and so on (see example below)



Boundary Trim

NOTE: This command is not available with AutoCAD LT

An easy way to **Trim** off lines that were 'over-digitized' (i.e., extend beyond an intended point of intersection with another feature) or to 'clip' existing external drawing files whose features overlap boundaries can easily be removed by using the **Boundary Trim…** option

In the following example a roads centerline drawing file will be trimmed to remove those features that lie outside the section lines of a file extracted from a 1:24000 scale PLSS drawing (see below)

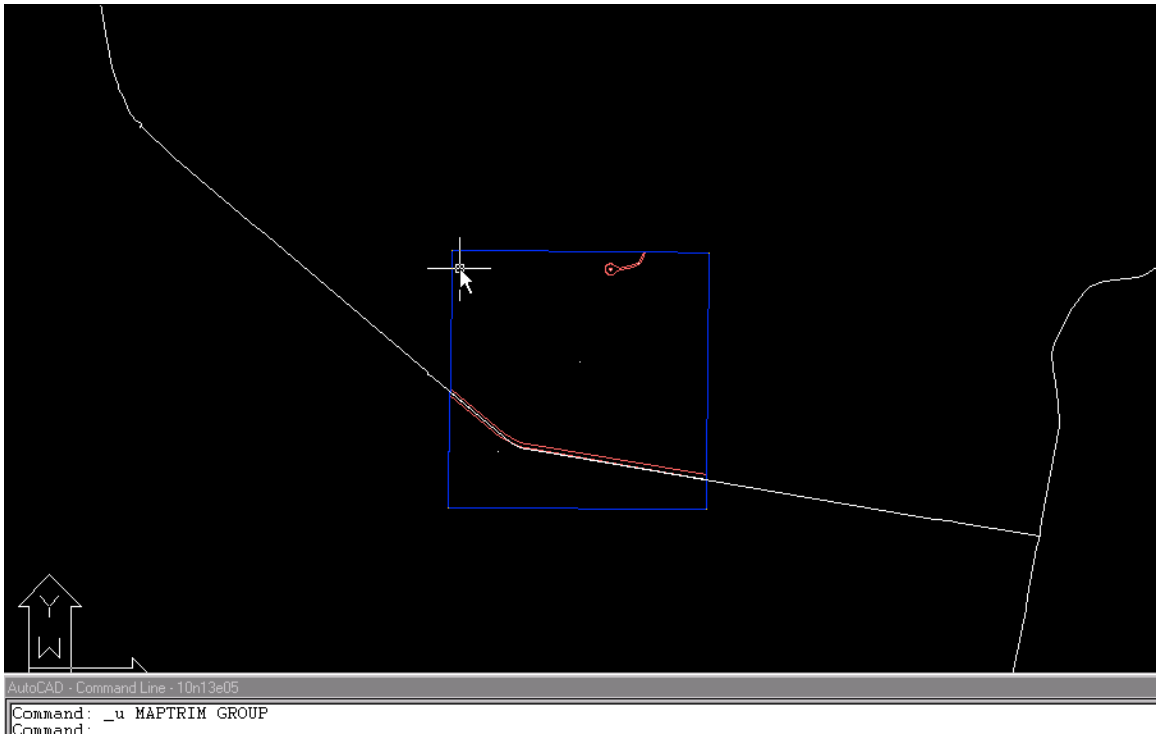
First, **Open** the control file. In this case a file representing the section ***10n13e05***

Next, **Insert** the drawing whose features will be trimmed to the section lines of the control file (see "Inserting External Drawing (*.dwg*) files"). Use 0,0 as the insertion point.

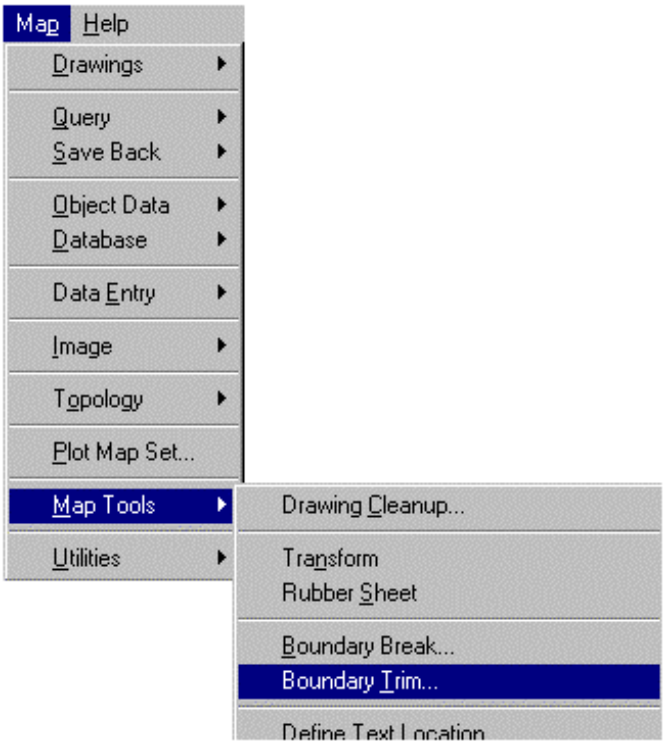
NOTE: The user must first **Explode** the drawing (i.e., block) that was inserted (see "Exploding a Block") before performing the **Boundary Trim**

Before performing the **Boundary Trim** command insure that the current layer is NOT the layer that will be used as the edge to trim against. In this example that layer set to PLS_GCDB

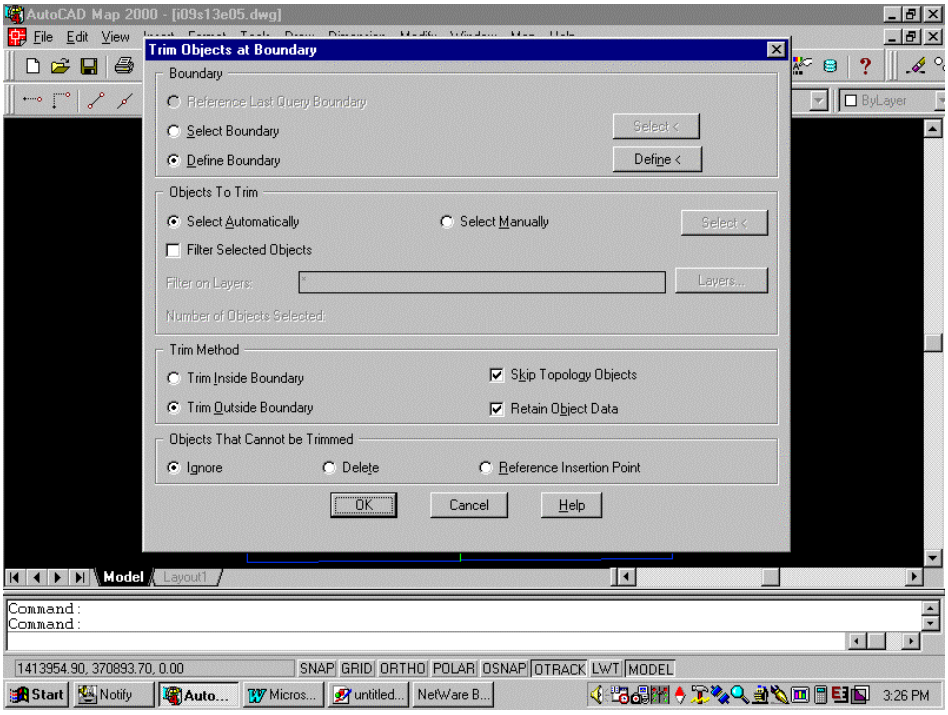
1



From the **Map** menu select **Map Tools** followed by **Boundary Trim…** (see below)



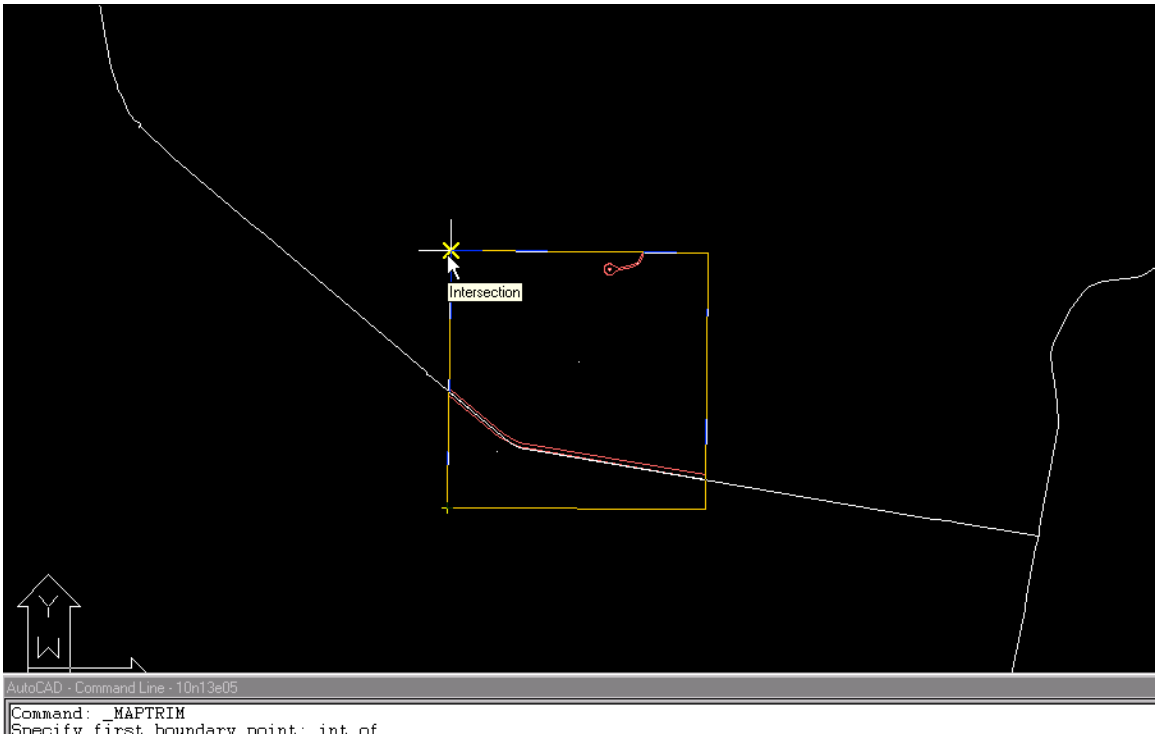
At the **Trim Objects at Boundary** dialog box set **Objects To Trim** to **Select Automatically** and **Trim Method** to **Trim Outside Boundary** (see below)



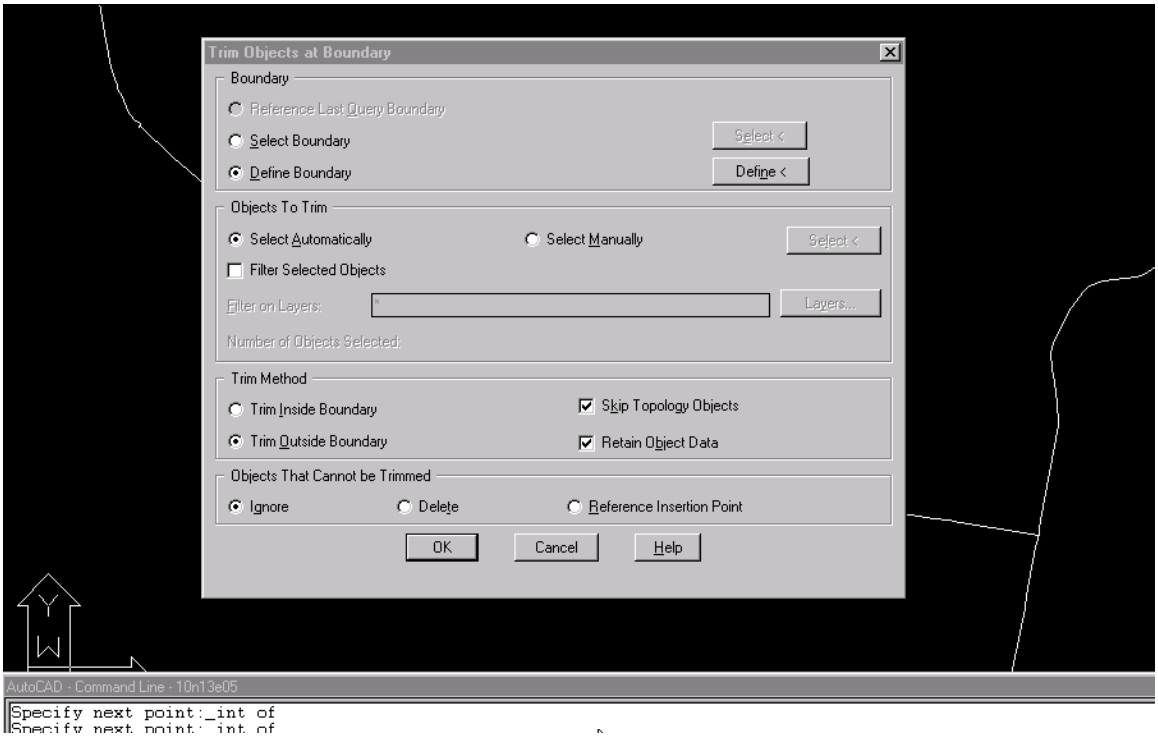
Then, ‘click’ the **Defi<u>n</u>e <** button (see above)

Use the cursor and the **Object Snap** selection options to select each section corner as a point (i.e., intersection) to define the outside boundary (see below). Close back on the first intersection selected.

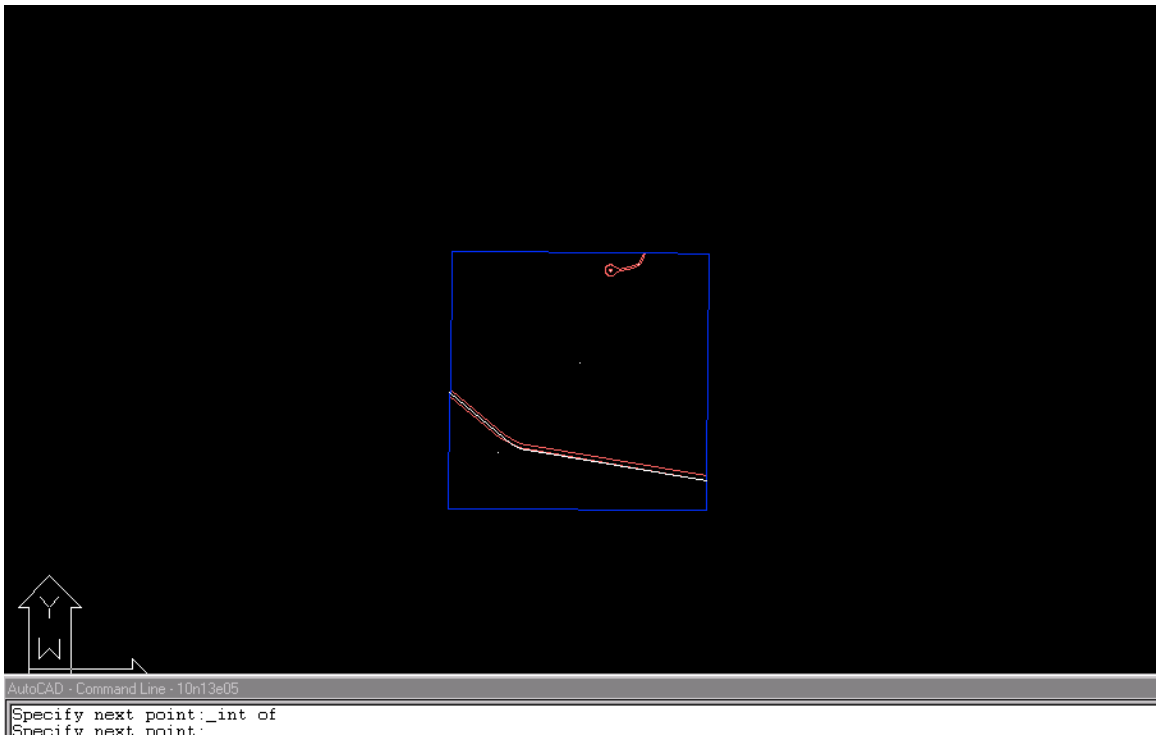
‘Right-click’ to end defining a boundary



After defining the boundary the simply ‘click’ **OK**



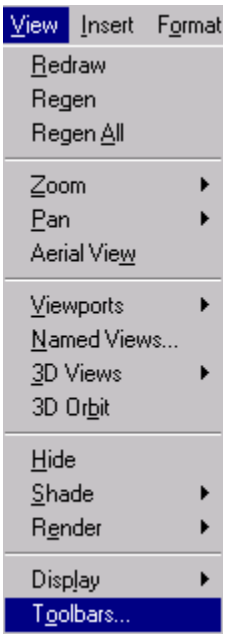
The objects, in this case centerlines, that fell outside the boundary (defined by the section lines) were removed from the drawing (see below)



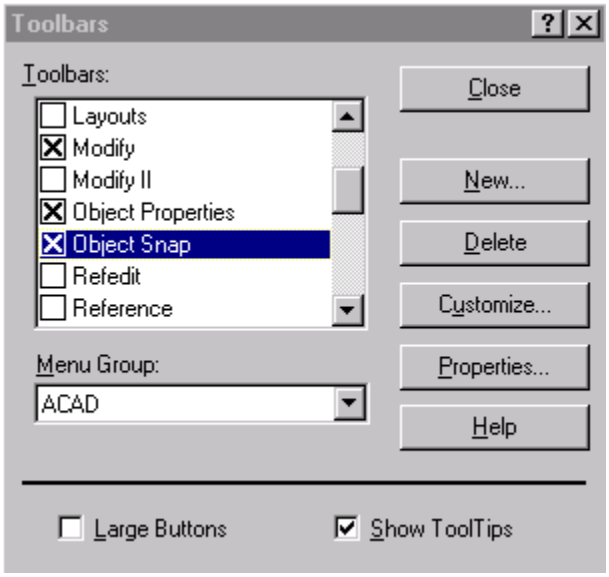
Using the Object Snap options

Object Snap allows the user to specify (i.e., select) exact locations on objects such as lines, circles, etc. For example, object snap will allow the user to draw a line from the middle of a circle, to the end of a line or to an apparent intersection.

To display the toolbar (or icons) for the object snap options from the **View** menu select **Toolbars…**

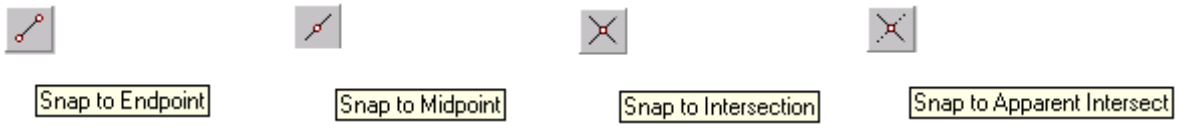


Next, from the **Toolbars** dialog box scroll to and enable (i.e., 'x') the Object Snap option



A toolbar containing a number of icons will appear (see below)

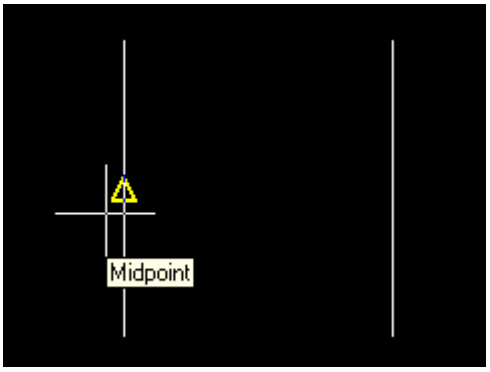
The most commonly used Object Snap options for mapping applications are pictured below



In the following example the user will snap a line between the two midpoints of two other lines

After issuing the line command the user is prompted to Specify first point:

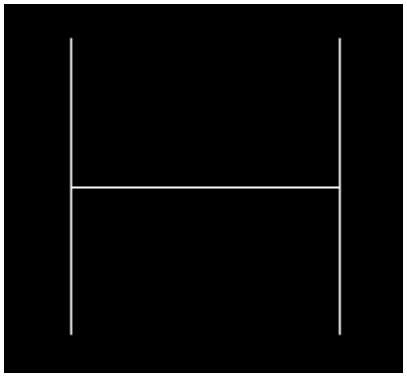
The user selected the Snap to Midpoint from the toolbar (see below)



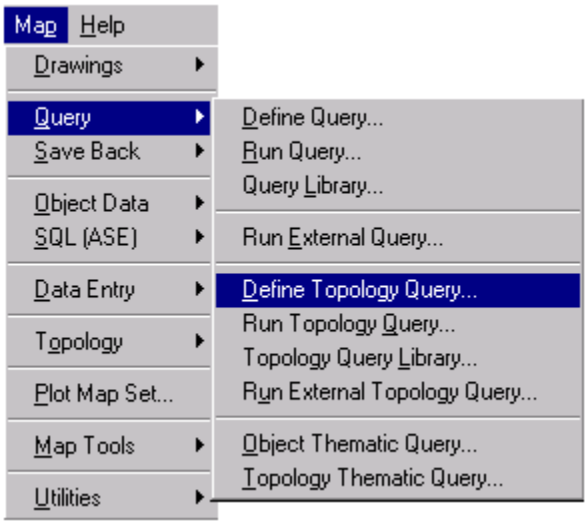
Next, the user is prompted to Specify next point or [Undo]:

Again, the user 'clicked' the Snap to Midpoint icon from the toolbar to select the exact middle of the other line (see below left)

'Left-click' to establish the next point of the line and 'right-click' to complete the command. The results are pictured below right.

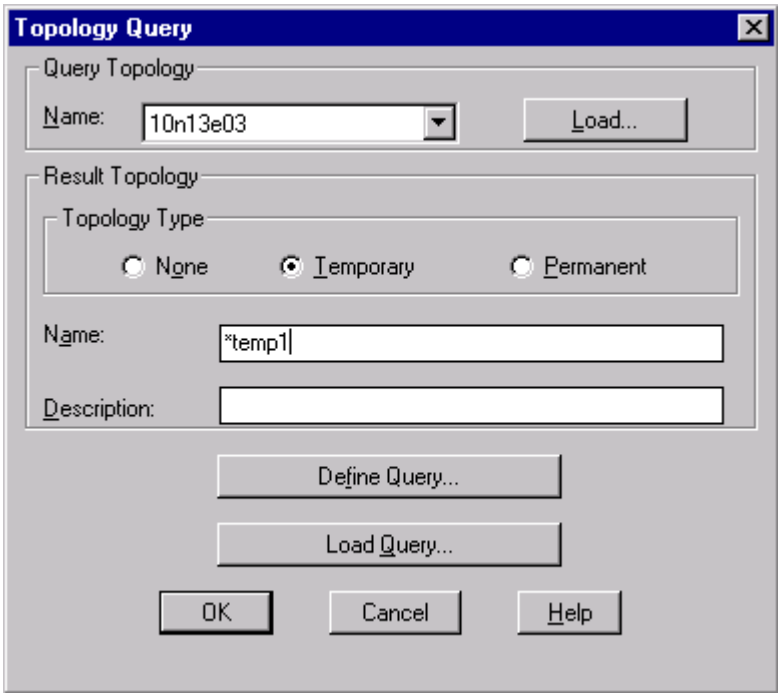


Procedures for displaying the value of Object Data

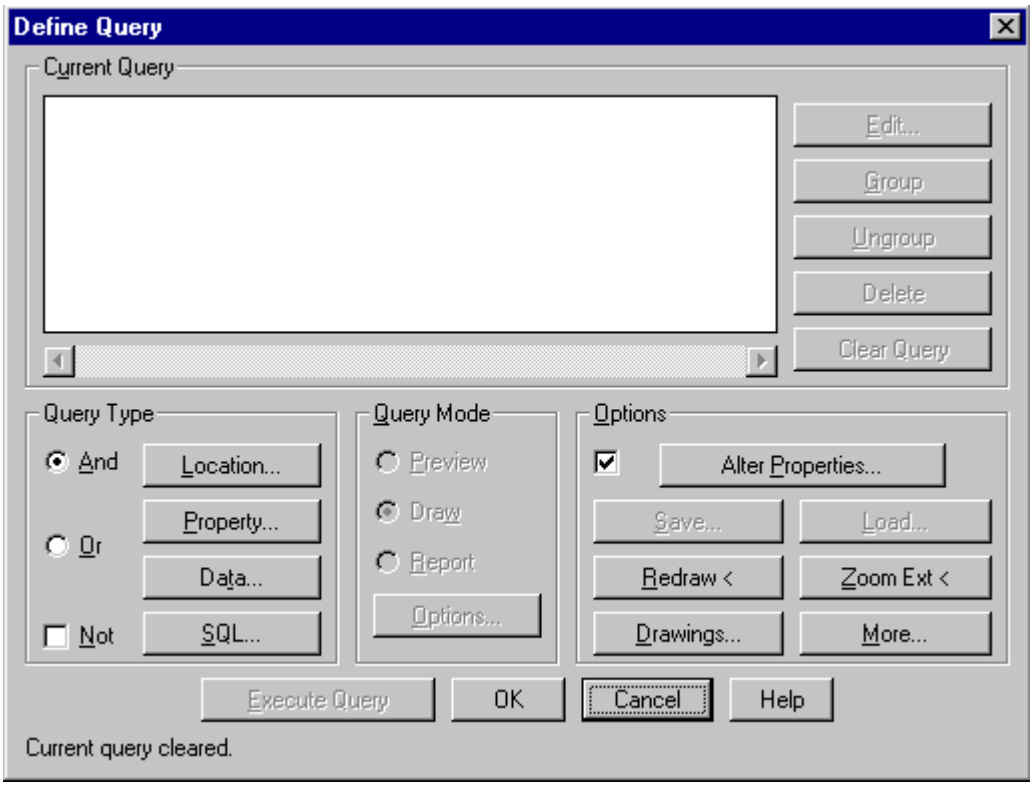


Next, from the **Topology Query** dialog box 'click' the **Define Query…** Button

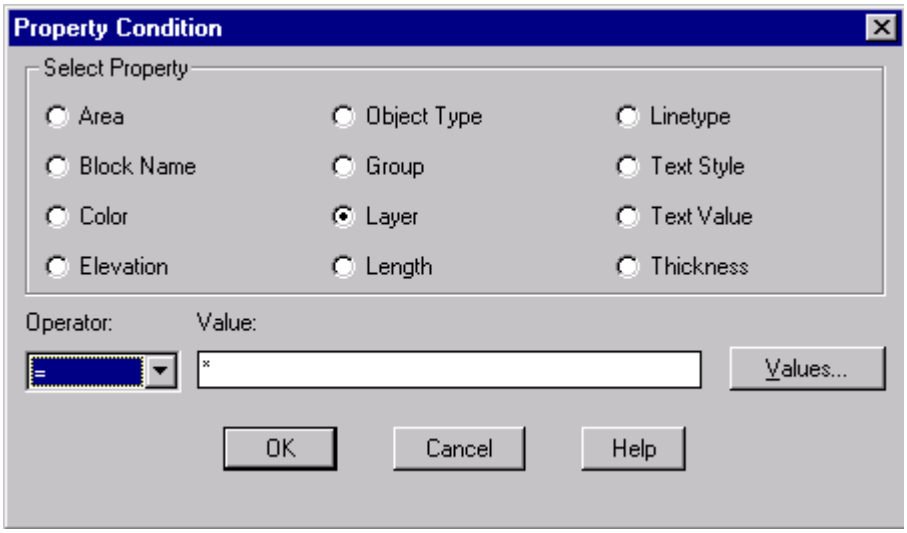
NOTE: Be sure that topology has been loaded



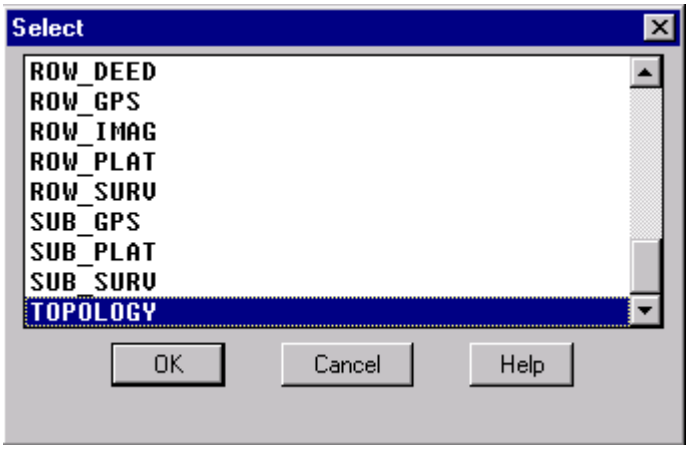
Next, from the **Define Query** dialog box under **Query Type** 'click' the **Property…** button



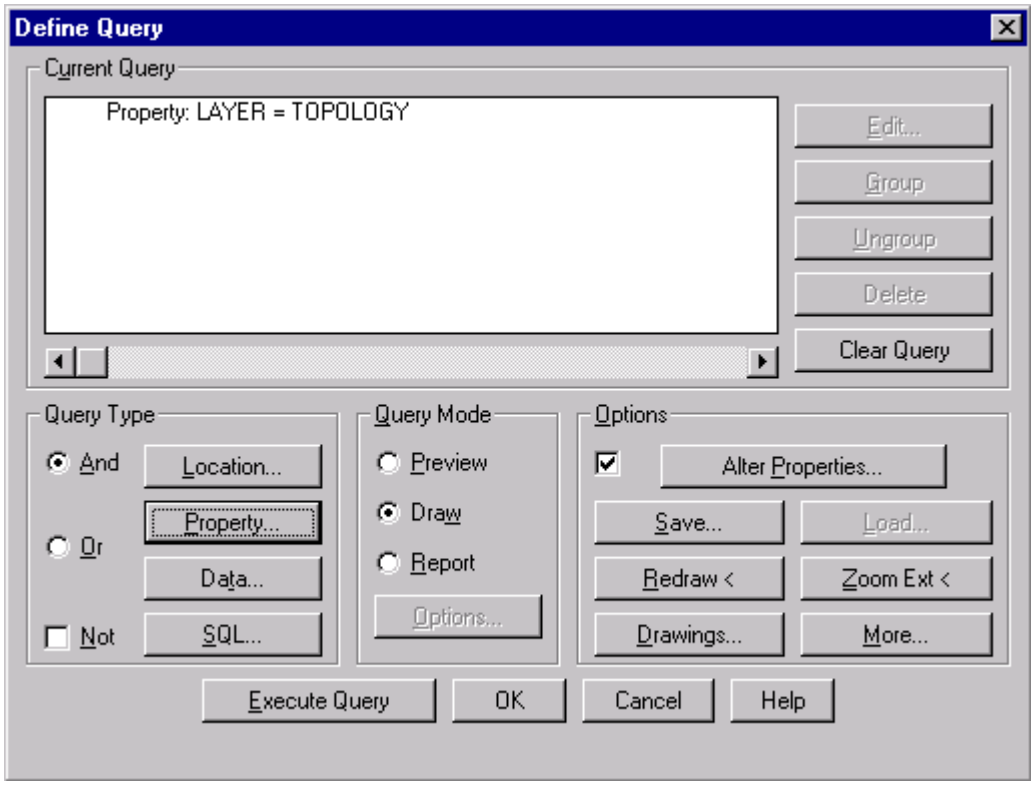
Then from the **Property Condition** dialog box 'click' layer (see below)



Next, select the desired layer value by 'clicking' the **Values…** button and scrolling to the proper layer. In this case , the layer ***topology*** (see below)

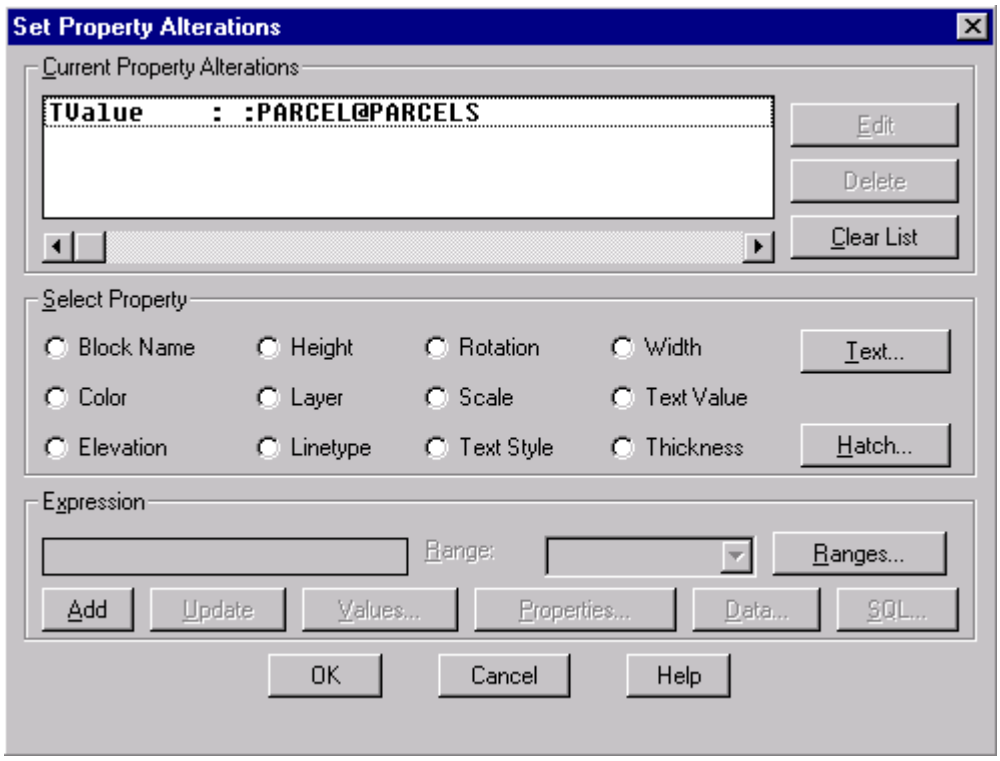


'Click' **OK** to return to the **Define Query** dialog box (see below)

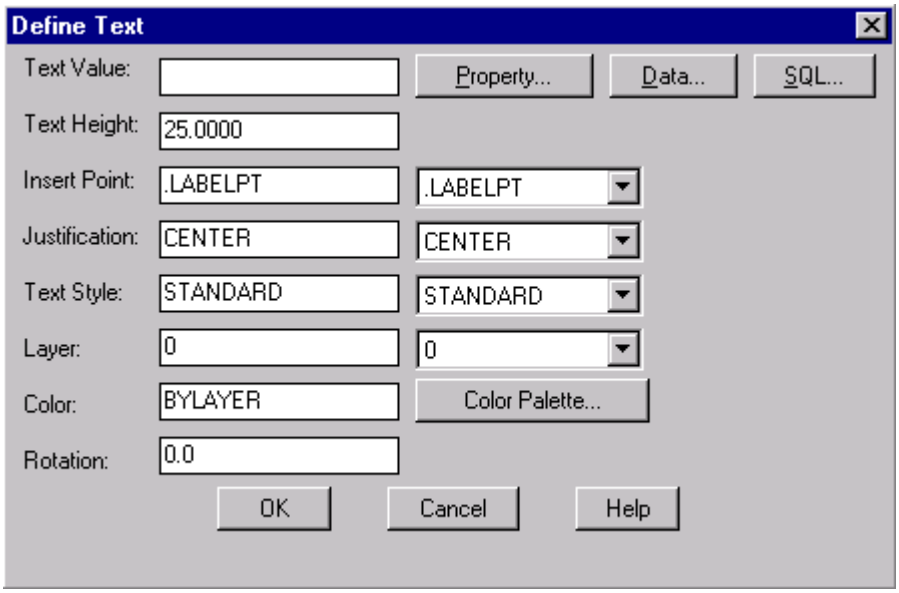


Next, under options ‘click’ the **Alter Properties…** button

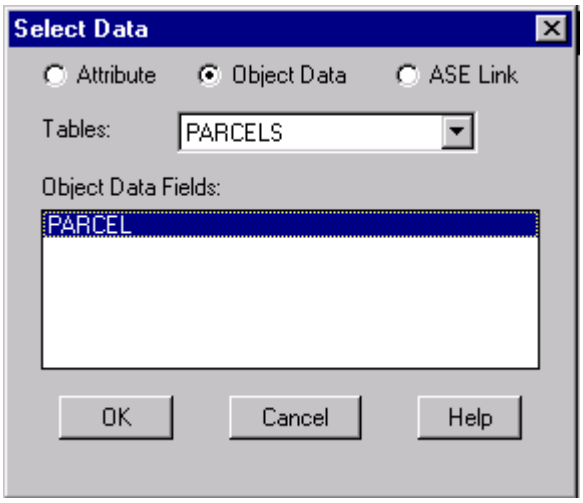
In the **Set Property Alterations** dialog box under the **Select Property** options ‘click’ the **Text…** button



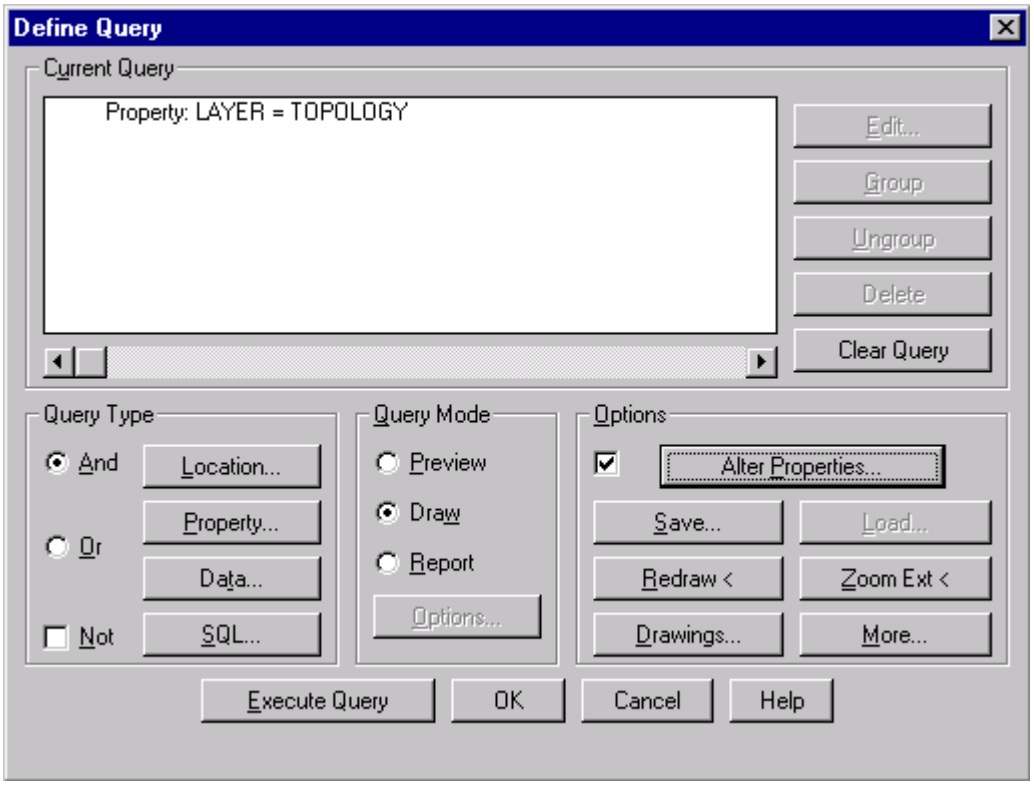
In the **Define Text** dialog box ‘click’ the **Data…** button



Next, in the **Select Data** dialog box be sure that the **Object Data** option is activated and that the proper table and field are selected and 'click' **OK** (see below)



'Click' **OK** until you are returned to the **Define Query** dialog box and 'click' the **Execute Query** button.

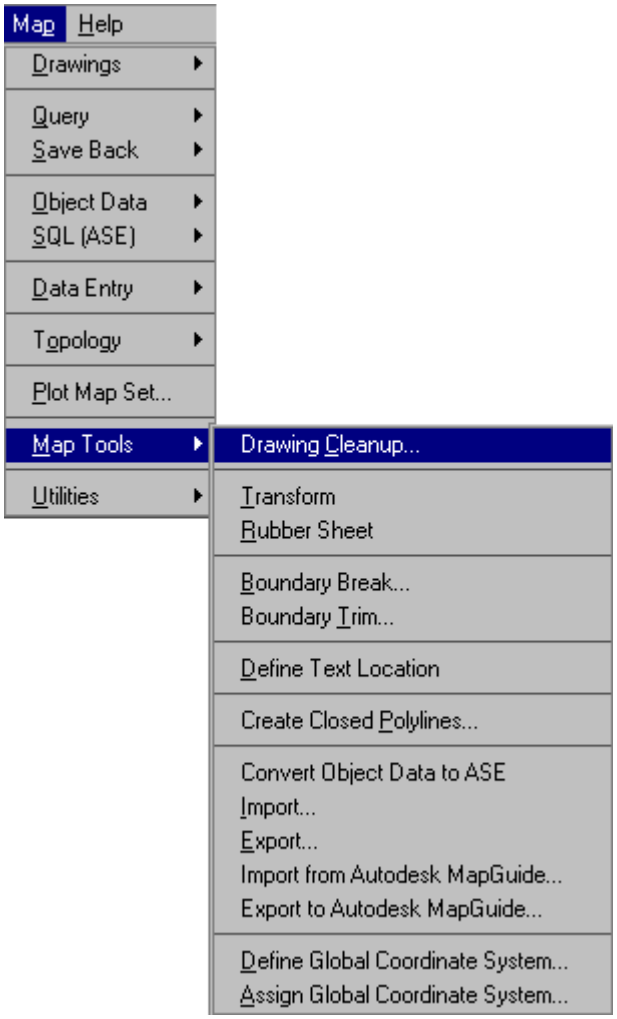


The values for the queried object data is then displayed to the screen.

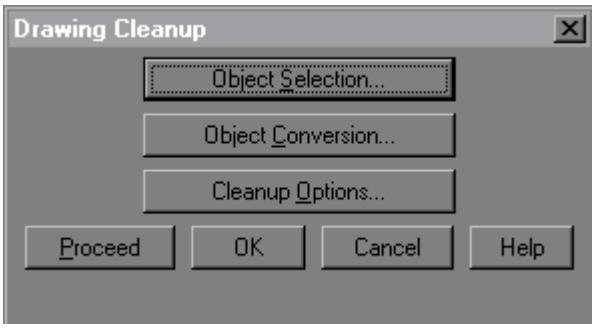
Creating polygon topology in AutoCAD Map

Before creating topology on a drawing the file must be edited to remove duplicate lines, close open polygons, etc. This process can be automated using the **Drawing Cleanup…** utility

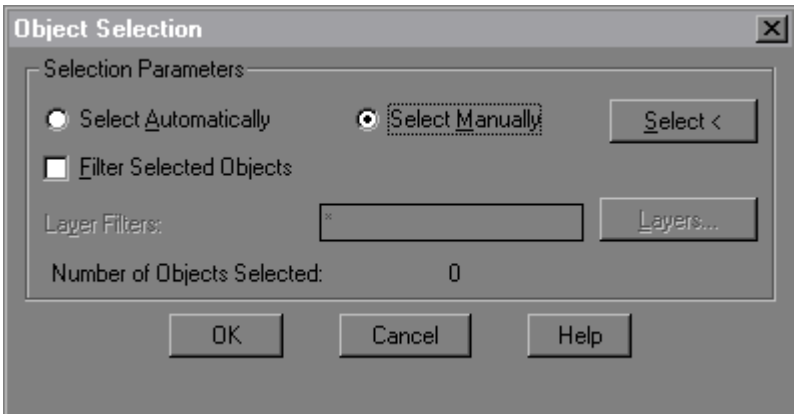
From the **Map** menu select **Map Tools** followed by **Drawing Cleanup…**



From the **Drawing Cleanup** dialog box 'click' the **Object Selection…** button (see next page)



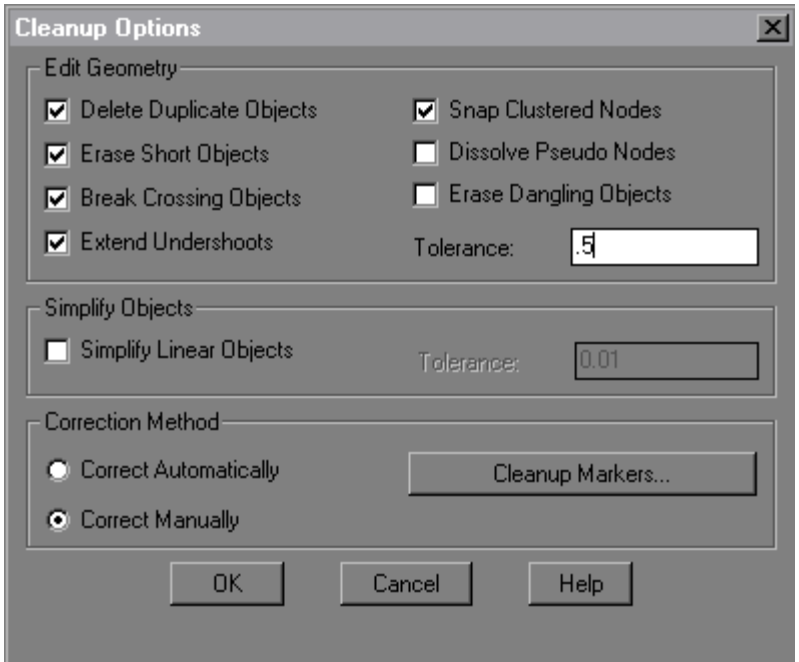
Next, from the **Object Selection** dialog box activate the **Select Manually** option then 'click' the **Select <** button (see below)



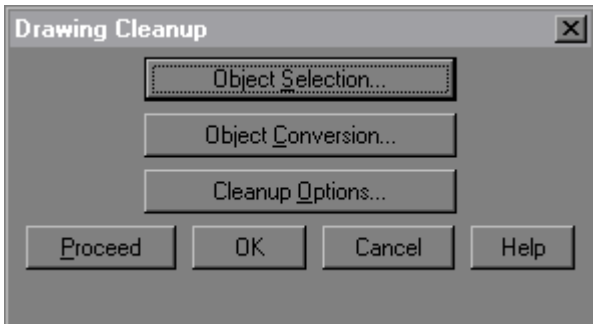
At the Select objects: prompt type **all** followed by a 'right-click' to accept the selected set of entities and then another <enter> to complete the command

Select objects: **all** <enter>, <enter>

When the **Object Selection** dialog box (see above) reappears 'click' the **OK** button. The **Drawing Cleanup** dialog box (see above) will reappear. 'Click' the **Cleanup Options…** button. From the **Cleanup Options** dialog box activate the **Correct Manually** option and set the **Tolerance:** to **.5** then 'click' the **OK** button



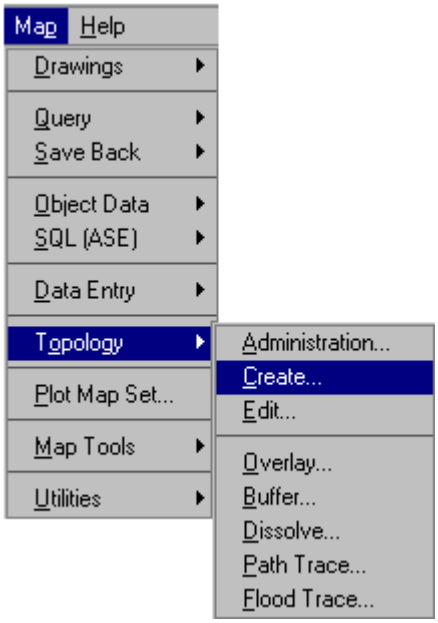
Next, form the **Drawing Cleanup** dialog box 'click' the **Proceed** button (see below)



The user will then respond to a number of file cleanup options. Simply type **a** (e.g., **all**) at each prompt.

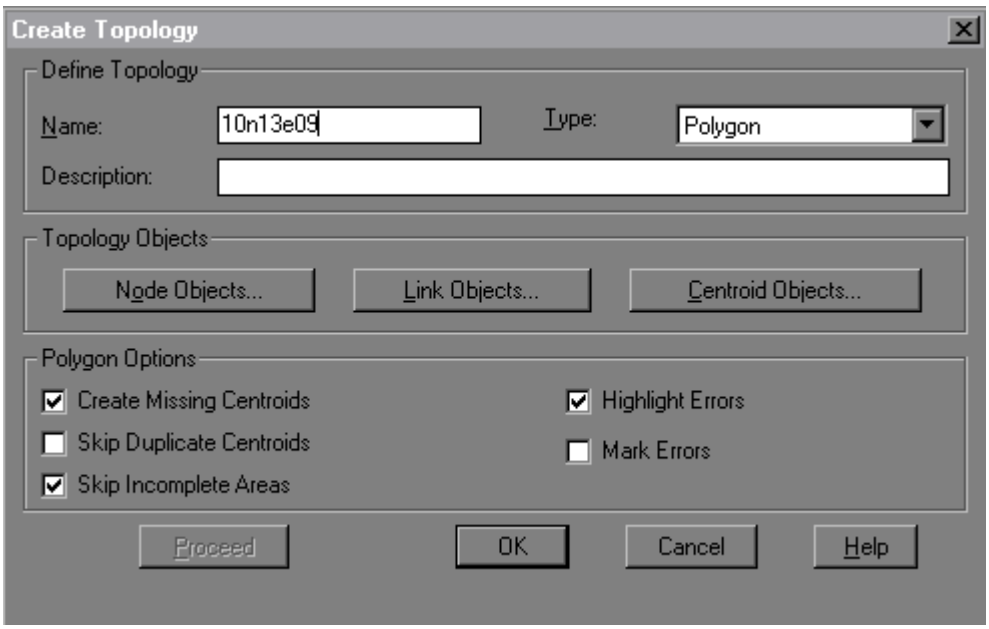
When the Command: line appears the cleanup is complete

Next, from the **Map** menu select **Topology** and then **Create…** (see below)



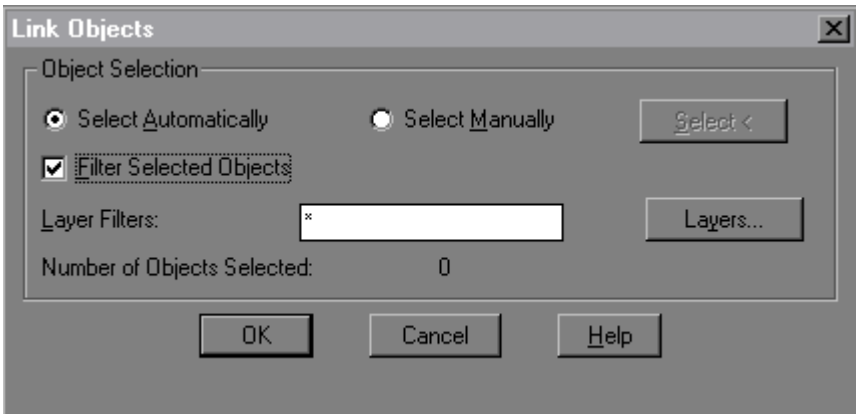
Next, from the Create Topology dialog box set **Type:** to Polygon and enter a file **Name:** for the topology. Under **Polygon Options** activate the **Skip Incomplete Areas** option (see below)

NOTE: The topology file name should be the same as the drawing file name using the established township, range and section naming convention



Next, 'click' the **Link Objects…** button

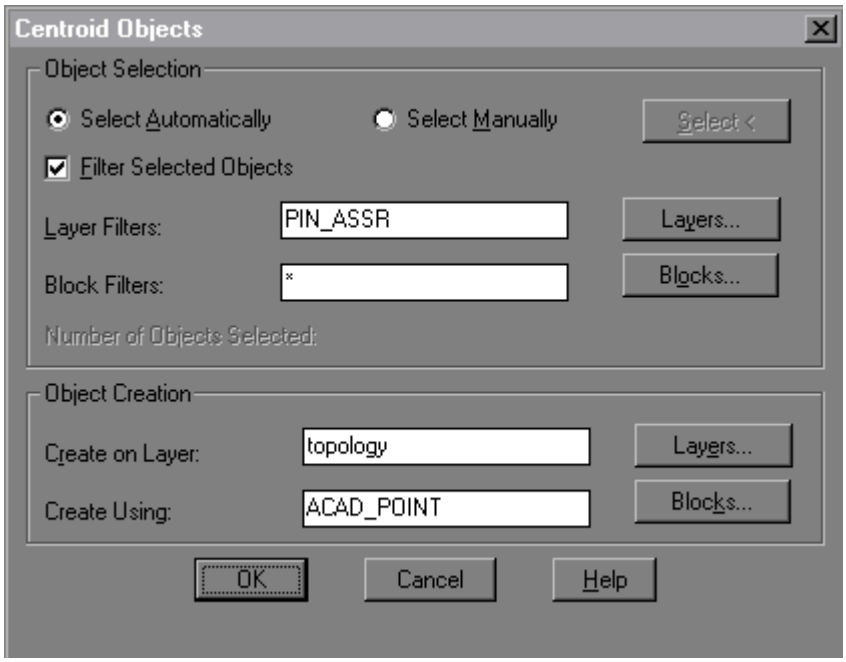
From the **Link Objects** dialog box activate both the **Select Automatically** and **Filter Selected Objects** options and then 'click' the **OK** button (see below)



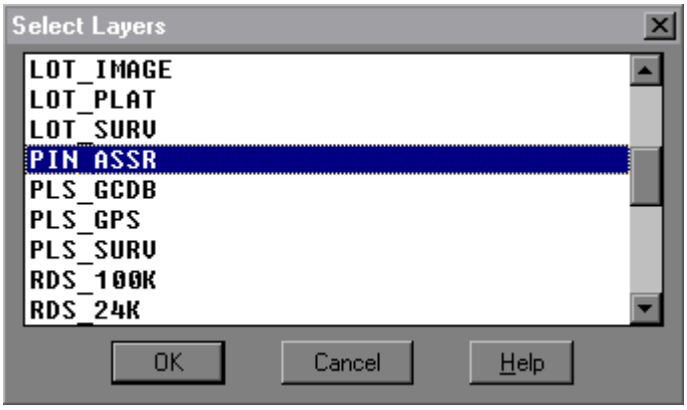
Next, form the **Create Topology** dialog box (see previous page) 'click' the **Centroid Objects…** button

From the **Centroid Objects** dialog box under **Object Selection** activate both the **Select Automatically** and **Filter Selected Objects** options.

Under **Object Creation** type in '**topology'** next to the **Create on Layer:** option (see below)

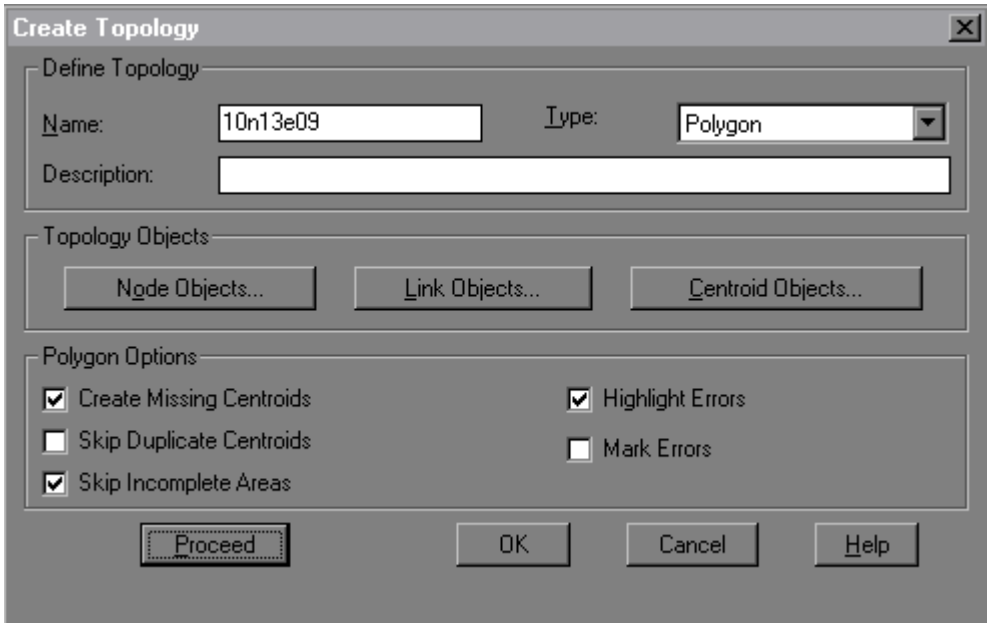


Next, 'click' the **Layers…** button. From the Select Layers dialog box scroll to the layer named **PIN_ASSR** and 'highlight'. 'Click' **OK** (see below)



After returning to the **Centroid Objects** dialog box (see top of page) again 'click' the **OK** button

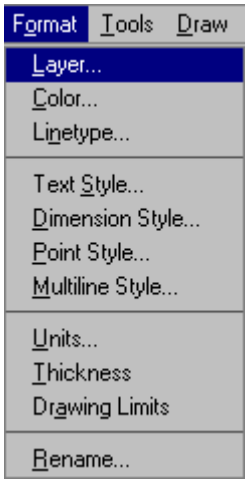
From the **Create Topology** dialog box ‘click’ the **Proceed** button (see below)



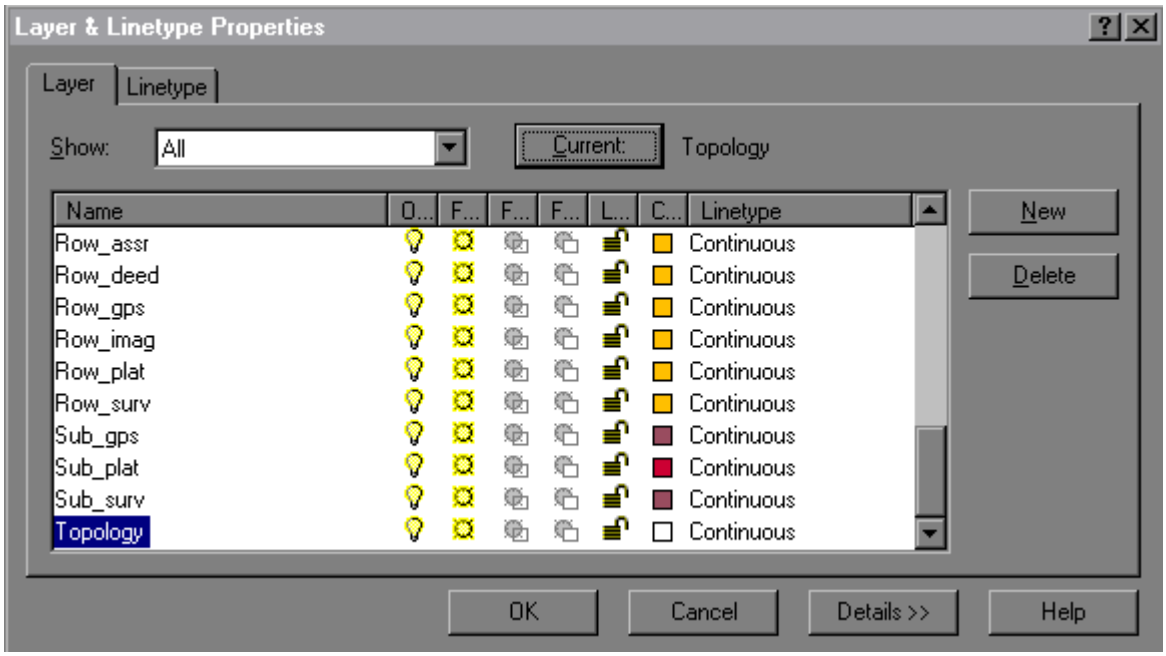
Centroids (e.g., points) will be generated at the center of each polygon in the drawing file on a layer named ***topology***.

Assigning a unique Parcel Identification Number (PIN) to each parcel (e.g., polygon) in the drawing file

The first step is to make the layer named ***topology*** the current layer. From the **Format** menu select **Layer…** (see below)



Next, from the **Layer & Linetype Properties** dialog box scroll to the layer named ***topology*** and 'highlight'. 'Click' the **Current:** button. The current layer name (e.g., ***topology***) will appear next to the button (see below)

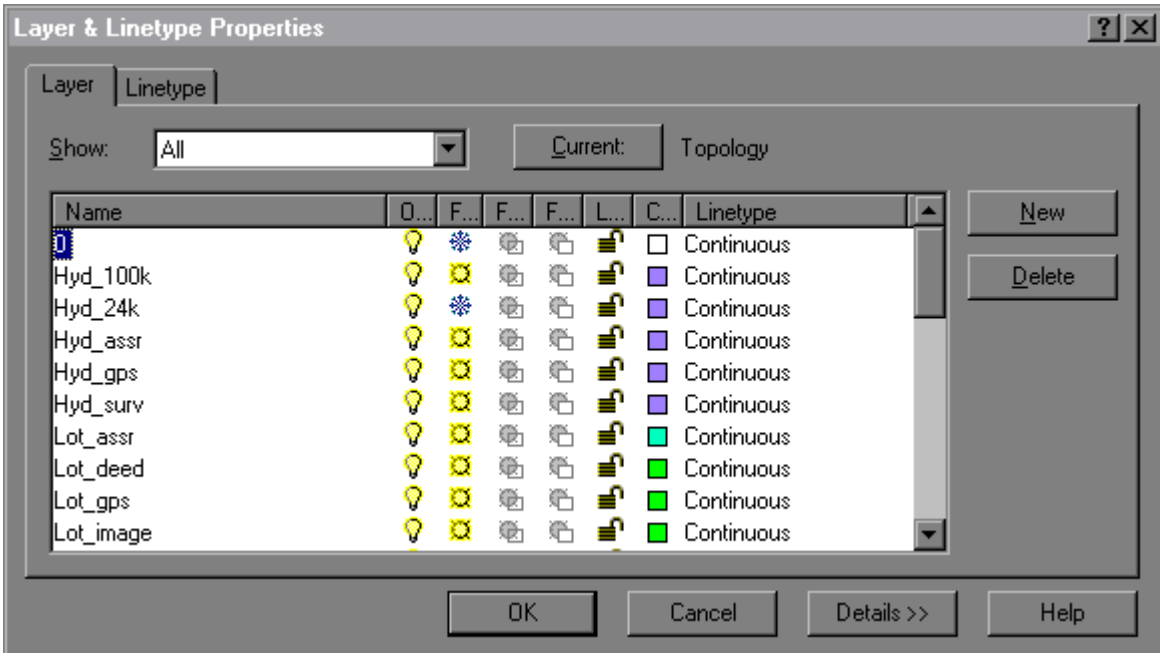


Next, the user will ‘freeze’ the entities on layer 0 (zero)

From the Layer & Linetype Properties scroll to and ‘highlight’ the layer 0. Under the first column labeled **F…** (**Freeze in All Viewports**) ‘click’ sunshine graphic (see below).

The layer is ‘frozen’ when a snowflake graphic (see below) appears under the **F…** column

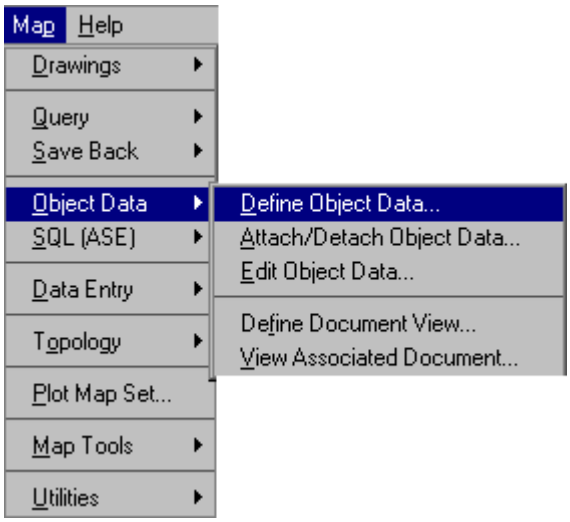
Next, ‘click’ the **OK** button (see below)



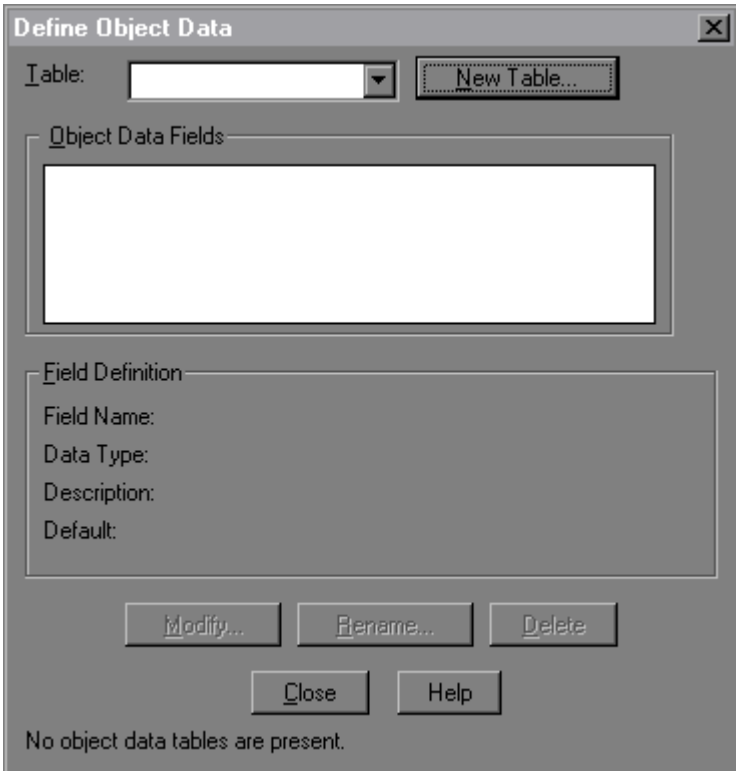
Those entities (e.g., lines) associated with layer 0 will disappear from the current view

Defining a Table

From the **Map** menu select **Object Data** followed by **Define Object Data…**



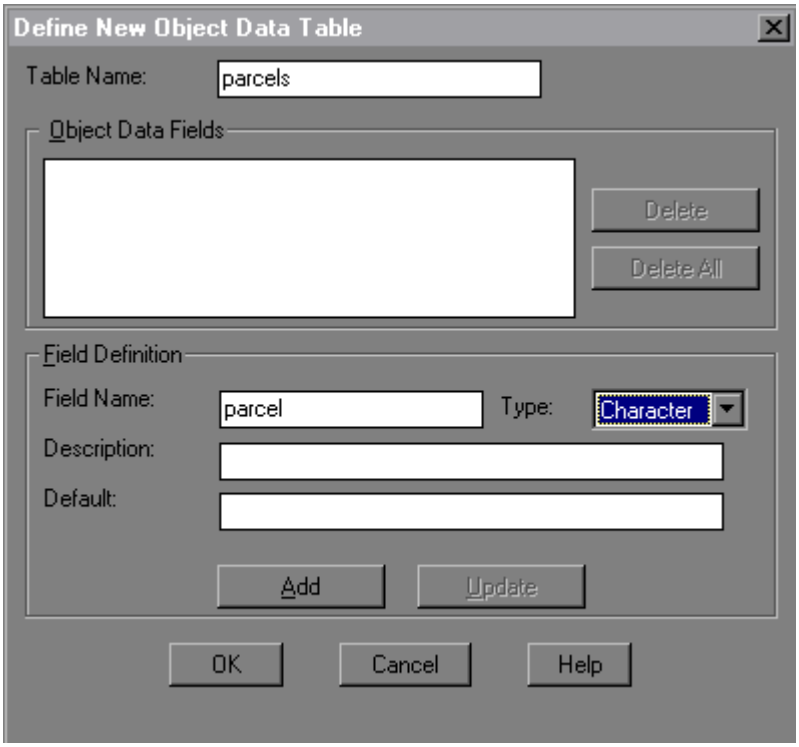
From the **Define Object Data** dialog box 'click' the **New Table…** button (see below)



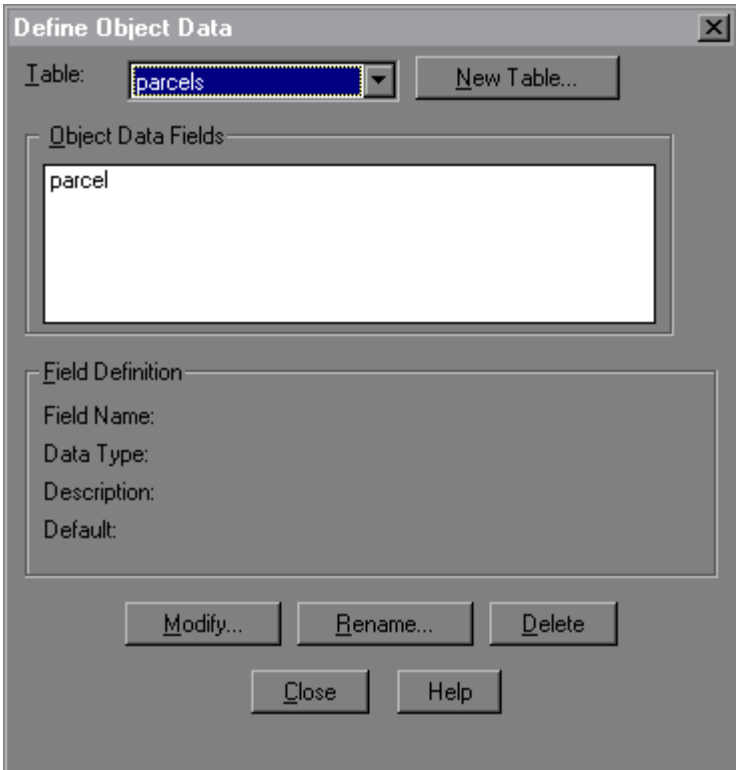
Next, from the **Define New Object Data Table** dialog box enter a **Table Name: *parcels*** and a **Field Name:**

parcel and set **Type:** to character

'Click' the **Add** button and then 'click' the **OK** button (see below)

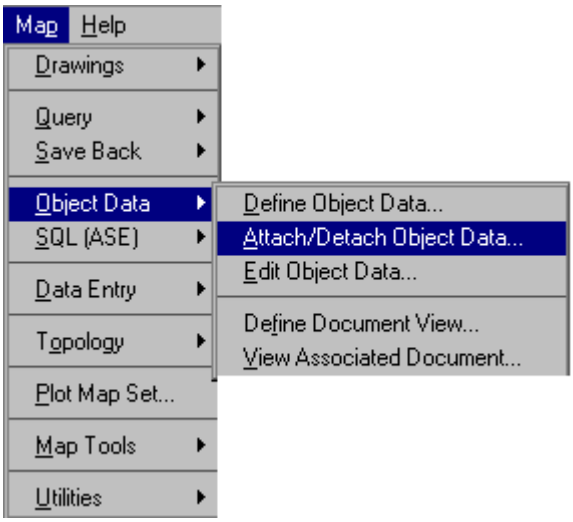


The **Define Object Data** dialog box should appear as shown below



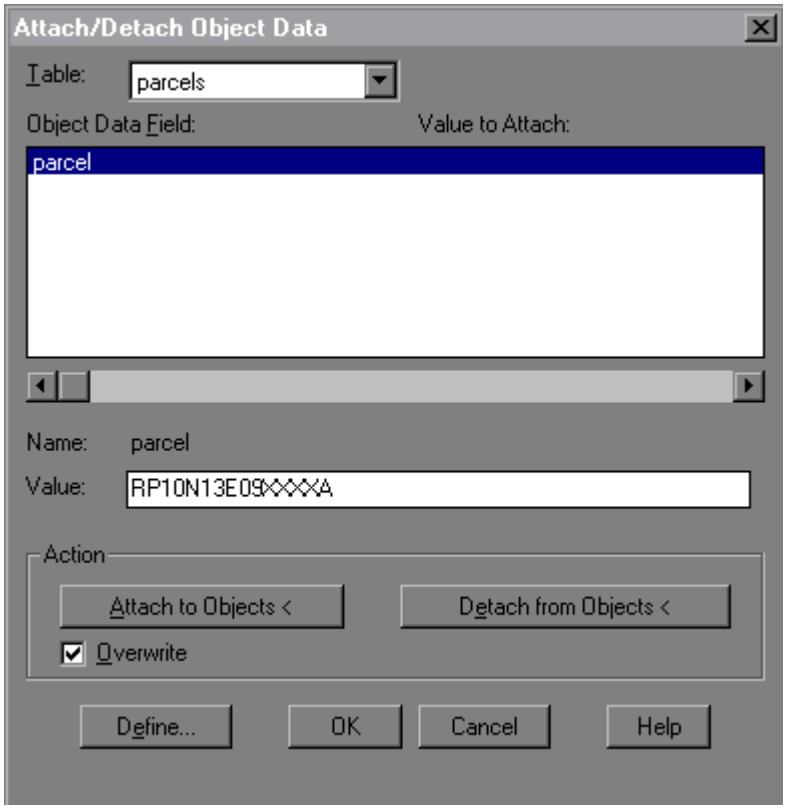
Assigning a PIN to each centroid (e.g., the point located inside each parcel polygon)

From the **Map** menu select **Object Data** and then **Attach/Detach Object Data…**



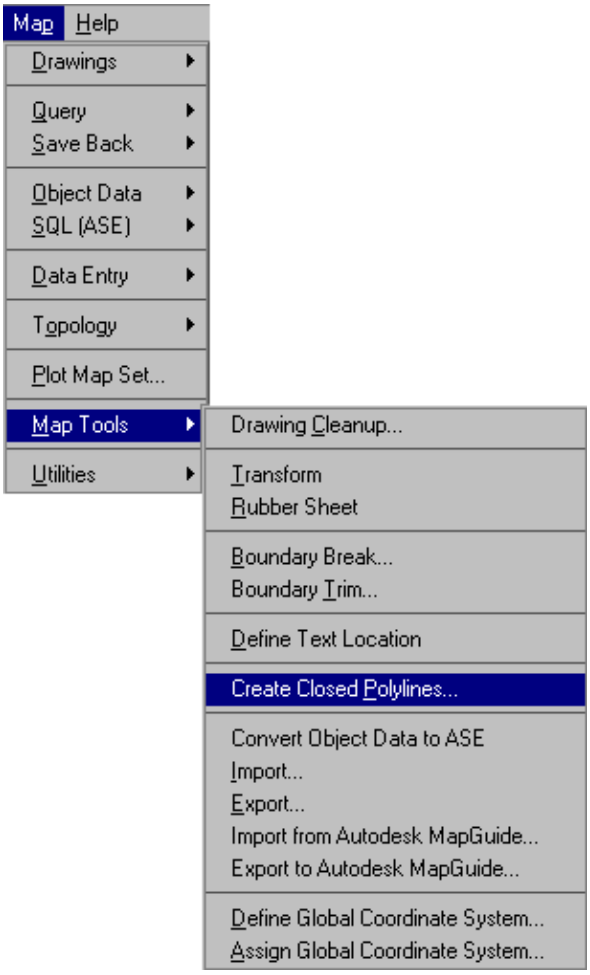
From the **Attach/Detach Object Data** dialog box 'highlight' the ***parcel*** field. In the dialog entry box next to **Value:** type in the fifteen (15) character PIN for that parcel then 'click' the **Attach to Objects <** button

NOTE: The PIN must be entered EXACTLY as the number appears in the assessment database. The value is case sensitive.

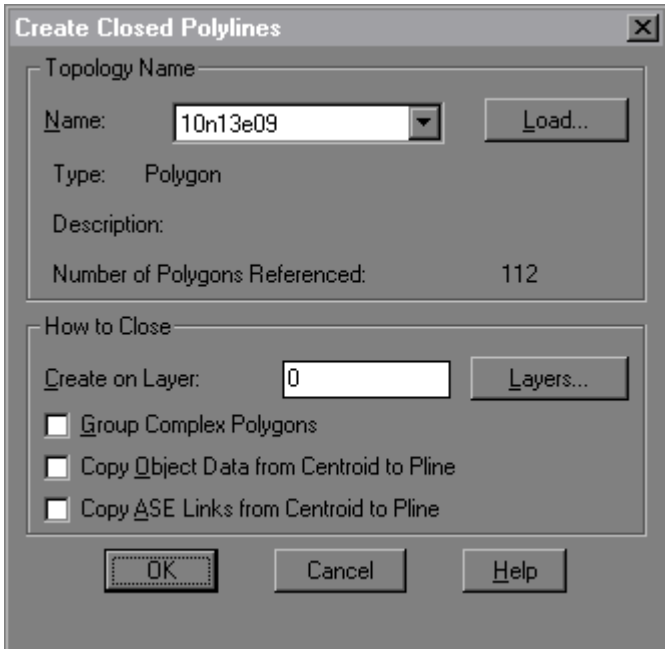


Exporting the drawing to an ArcView shape (*.shp*) file

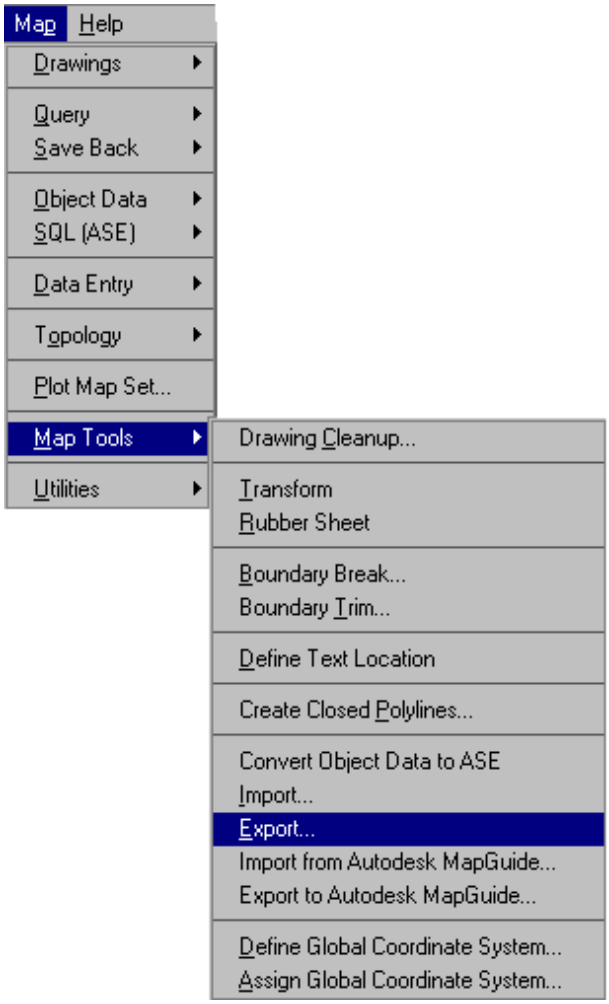
Before exporting to a shape (***.shp***) file the user must close all polygons. From the **Map** menu select **Map Tools** followed by **Create Closed Polylines…** (see below)



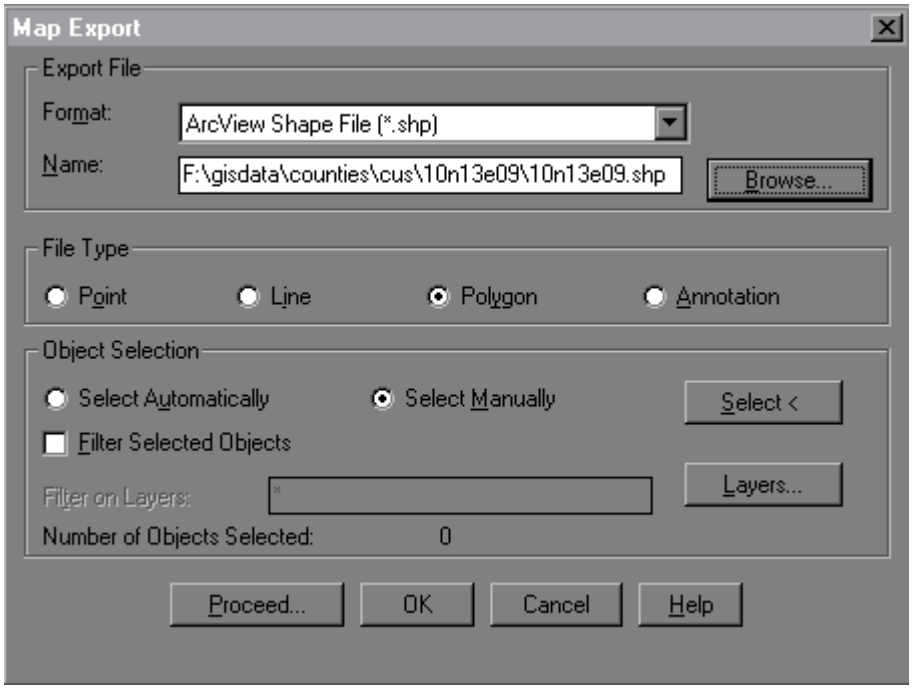
From the **Create Closed Polylines** dialog box **Name:** the topology and 'click' OK (see below)



Next, from the **Map** menu select **Map Tools** and then **Export…** (see below)

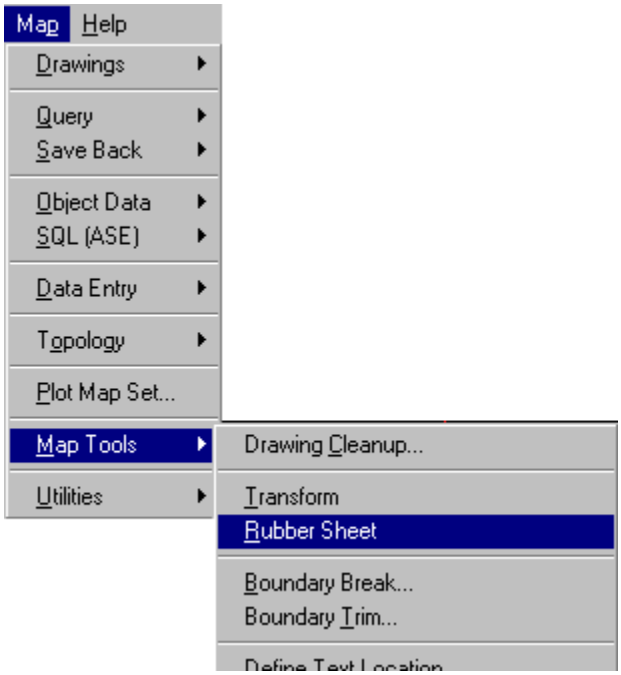


In the Map Export **dialog box under** File Type **activate the** Polygon **option. Under** Export File Format: **select ArcView Shape File (*.shp). Enter an appropriate file name and then 'click' the** Select < **button**



Rubbersheeting to the GCDB (e.g., control drawing file)

From the **Map** menu select **Map Tools** followed by **Rubber Sheet** (see below).



Next, the user will be prompted to select **Base point 1:**

Starting in the SW Viewport Base point 1: is the SW section corner as digitized from the image data (in red).

The user is then prompted for a **Reference point 1:**

Reference point 1: is the SW corner of the section extracted from the GCDB data.

Repeat for all four (4) section corners.

After entering all four corners the user is prompted to Select objects by <Area>/Select:

Enter “s” (for select) then use the “all” option (see below).

Select objects by <Area>/Select:**s**
Select objects:**all**

WARNING!!! It is very important to remove the externally referenced GCDB file!!!

To do so, type in “remove” (see below).

Select objects: **remove**
Remove objects:**1 found, 1 removed**
Remove objects: <enter>

After rubbersheeting the map change the Section_tmp layer to Section.

To do so, at the Command: prompt type “change”

Command:**change**

Select objects:

Use the mouse to select the four (4) lines representing the section boundaries.

Then select the Properties option (see below).

Properties/<Change point>:p

Change what property <Color/Elev/Layer/Ltype/ltscale/Thickness> ? la (for Layer).

New layer <CURRENT_LAYER>:**section**

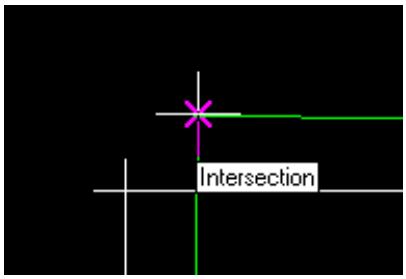
Procedures to remove GCDB from selected set during 'rubbersheet' process

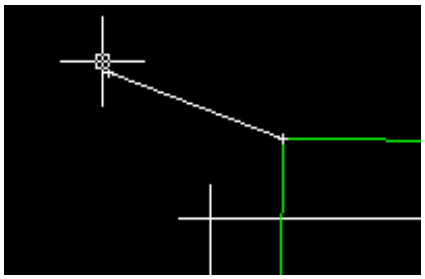
When the Idaho State Tax Commission initially distributed the Geographic Coordinate Data Base (GCDB) files, most of the Townships in Idaho had not yet been completed. Since then the Bureau of Land Management (BLM) has continued to generate data. Those files are available over the internet. They can be directly imported into an AutoCAD environment. In these instances the entities (or features) in the drawing will NOT be part of a block. This makes it difficult to easily remove the GCDB from the selected set during the 'rubbersheet' process.

A simple workaround is to quickly add a temporary line to each corner of the GCDB. The endpoint of that line will serve as the reference point for 'rubbersheeting'. The layers comprising the GCDB can then be 'frozen' thus eliminated from the selected set of entities to be 'rubbersheeted'.

First, establish four (4) viewports around each of the four corners of the GCDB (see **USING VIEWPORTS** pg. J1)

Next, add a line that originates at the intersection of the two lines representing each respective corner of the GCDB (i.e., control) drawing (see below)



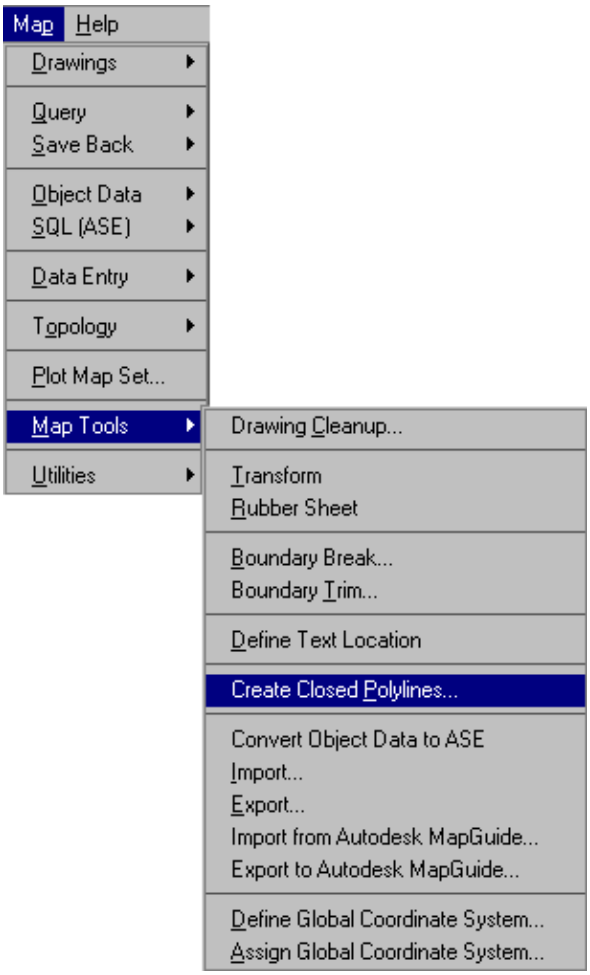


After adding a line to each corner of the GCDB, 'freeze' the layers associated with the GCDB (see **Freezing layers**)

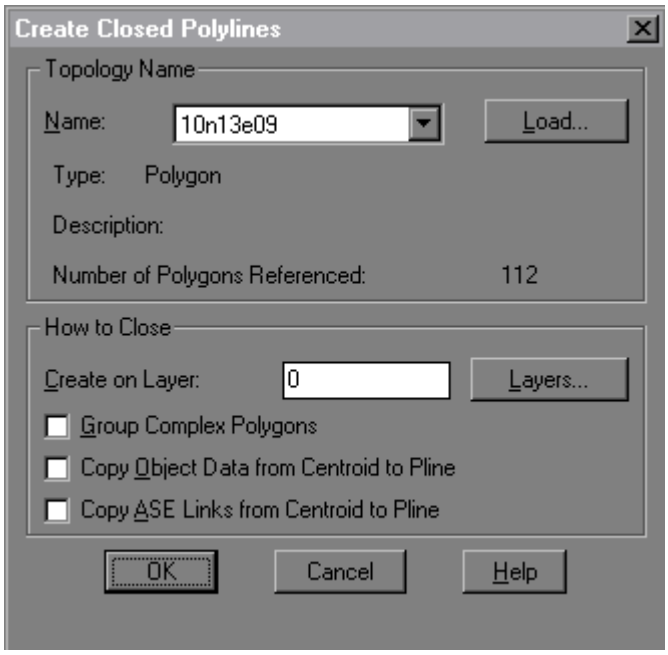
After 'freezing' the layers associated with the GCDB, perform the 'rubbersheet' command as described in **RUBBERSHEETING TO GCDB** pg. P1-P2.

Exporting the drawing to an ArcView shape (*.shp*) file

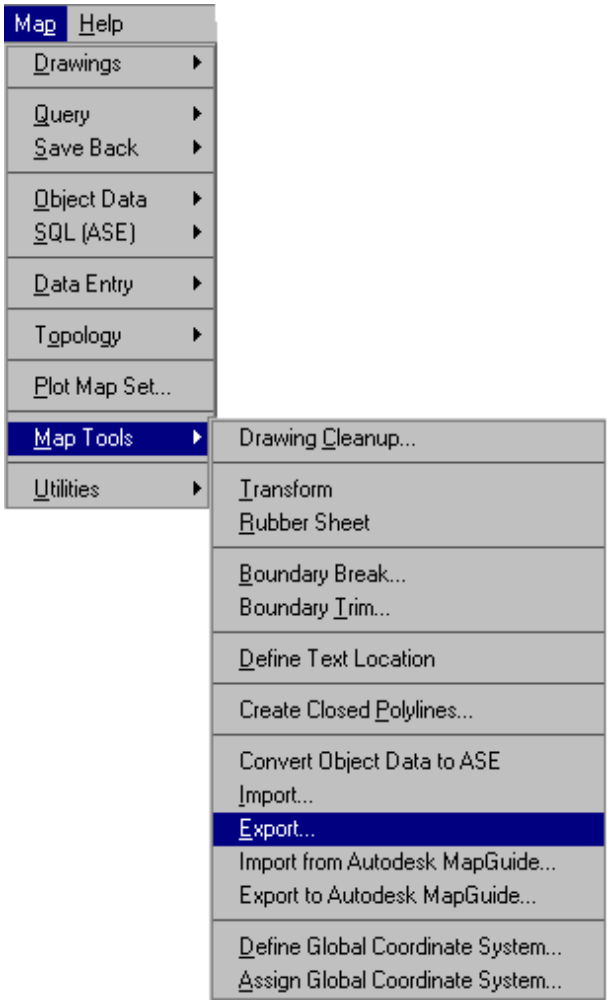
Before exporting to a shape (***.shp***) file the user must close all polygons. From the **Map** menu select **Map Tools** followed by **Create Closed Polylines…** (see below)



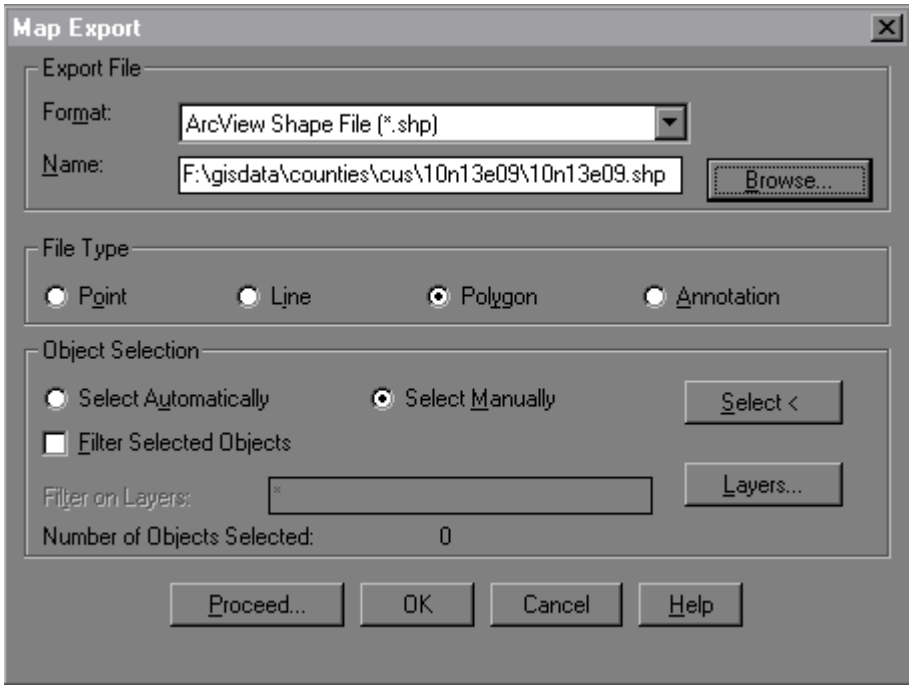
From the **Create Closed Polylines** dialog box **Name:** the topology and 'click' OK (see below)



Next, from the **Map** menu select **Map Tools** and then **Export…** (see below)

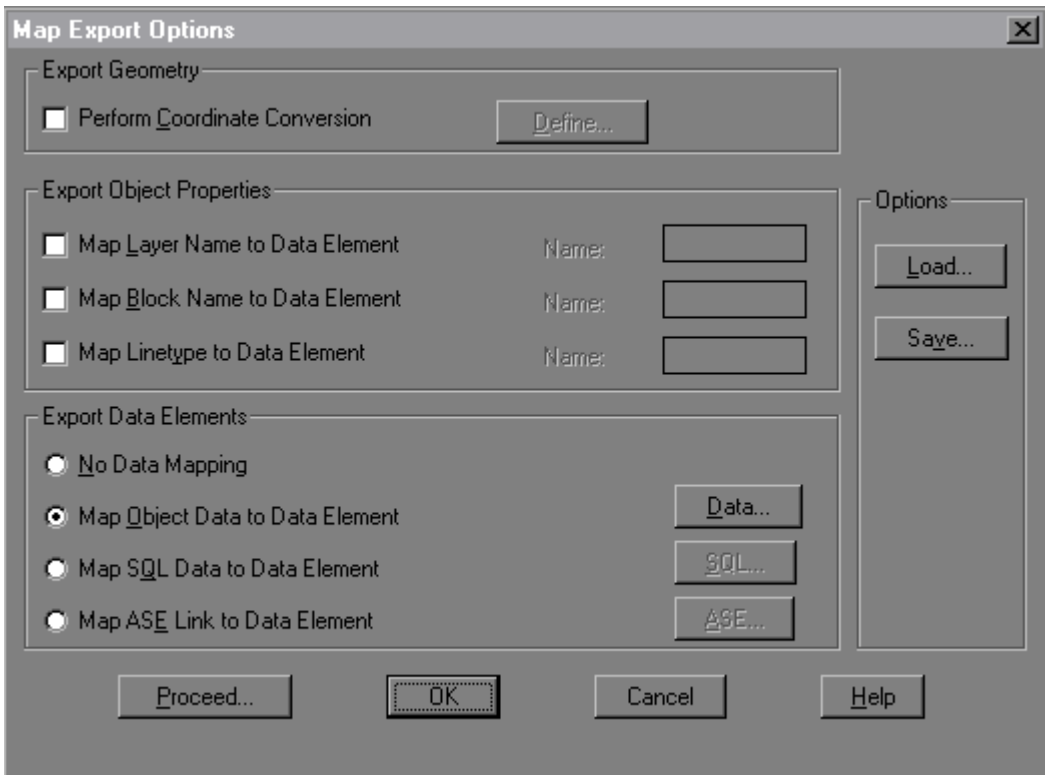


In the **Map Export** dialog box under **File Type** activate the **Polygon** option. Under **Export File Format:** select ArcView Shap File (*.shp). Enter an appropriate file name and then 'click' the **Select <** button

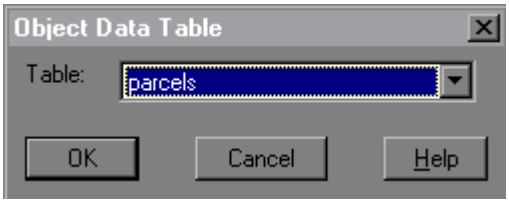


At the Select objects: prompt type **all** (e.g., Select objects:**all**) then <enter> to accept the selected set and
complete the command

Next, from the Map Export Options dialog box under **Export Data Elements** activate the **Map Object Data to Data Element** option then 'click' the **Data…** button



From the **Object Data Table** dialog box select the tables named ***parcels*** then 'click' the **OK** button (see below)



After the **Map Export Options** dialog box (see top of page) returns 'click' the **Proceed…** button

Using the Trim Command

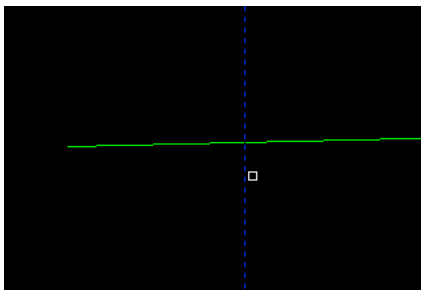
Prior to using Map's cleanup options the user can remove instances where lines overlap or extend beyond the intended intersection. To remove the portion of a line that overlaps another use the **Trim** command.

NOTE: Entities cannot be trimmed against a line that is part of a block

From the **Modify** menu select **Trim** (see below)

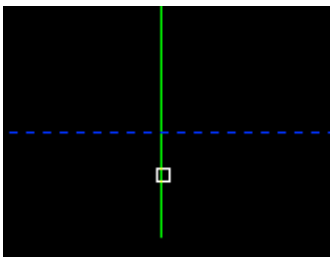
Next, the user is prompted to Select cutting edges…Select objects:

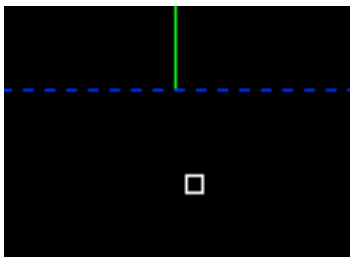
Use the cursor and 'click' on the line that will serve as the edge (or point) at which the overlapping line is to be trimmed off (see below)



After selecting the appropriate line 'right-click' to continue the command

The user is then prompted to Select object to trim or [Project/Edge/Undo]: Again, use the cursor and 'click' on the portion of the line that is to be removed or trimmed (see below)





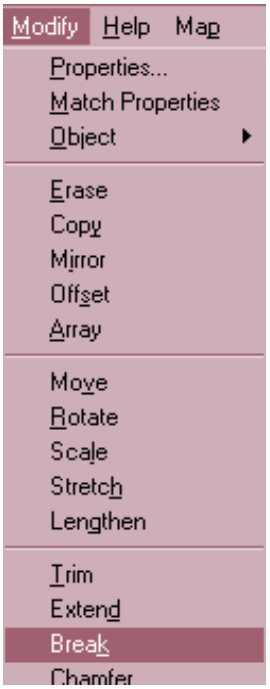
To complete the command 'right-click' and select **Enter** from the dialog box (see below)

Procedures to 'break' a line

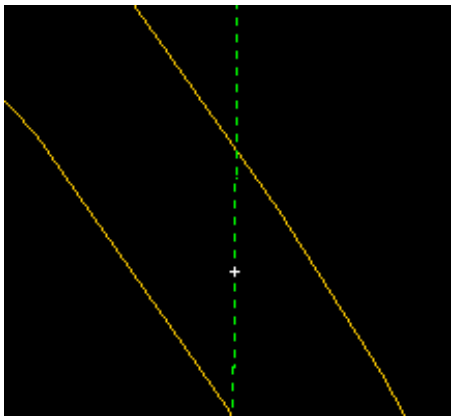
Two or more lines may overlap one another without forming a vertex (or intersection) at the point of overlap. To more easily accommodate the creation of topology it is best to create a physical intersection wherever two or more lines meet (or cross).

The Break… command will allow the user to break two or more lines at a common point (i.e., intersection)

From the **Modify** menu select **Break** (see below)



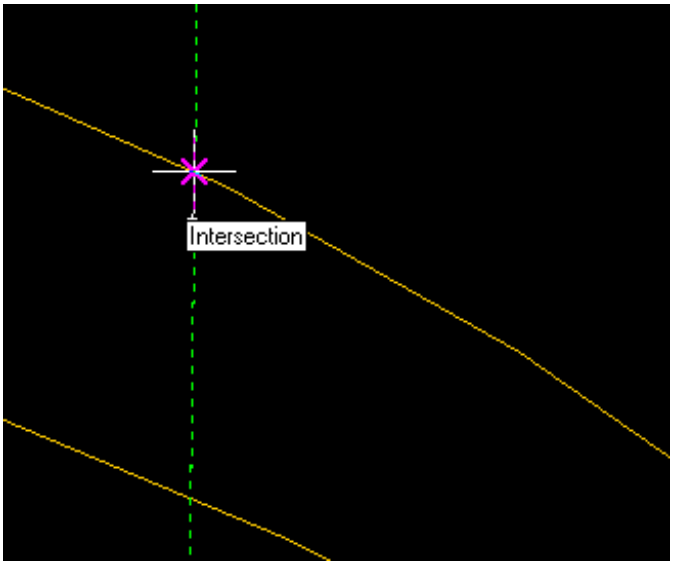
Next, the user is prompted to select the line to be 'broken' (only one entity can be selected at a time). Use the cursor and 'left-click' on the object.

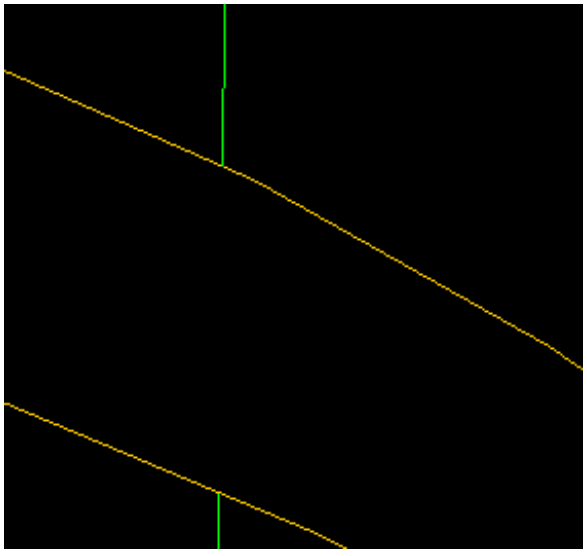


Then, at the **Enter second point (or F for first point)**: type in **f** (for **f**irst point)

Use the Snap to apparent intersection option to select the first point of the 'break' (see **OBJECT SNAP OPTIONS** pg. L1-L2)

Lastly, again use the Snap to apparent intersection option to select the second (i.e., final point of the break. That portion of the line between the two user-defined points will be removed (see below)





Using the Stretch command

There will be occasions where there are NOT four section corners (i.e., reference points) available from the control file (i.e., GCDB) to properly perform the 'rubbersheet' command. For example, many of the sections of the GCDB data follow a river meander. Those sections are not typical 'square' section files. In those instances the user can still edit the vectors (i.e., lines) to be coincident with other available control points by use of the **Stretch** command.

NOTE: The **Stretch** command will NOT work on a block

NOTE: The **Stretch** command will NOT work unless the lines to be stretched all begin and/or terminate at a common intersection. In other words, if two perpendicular lines overlap the point where they overlap is NOT an intersection.

To create an intersection at that point the user must physically 'break' the two lines at that point of overlap (see **Using the Break Command**).

First, establish a window around the area to be edited.

From the **Modify** menu select **Stretch** (see below)

The user is then prompted to Stretch objects to stretch by crossing-window or crossing-polygon… Select objects:

A crossing-window or crossing-polygon is simply a user-defined box or a user-defined polygon shape to cross the objects to be stretched.

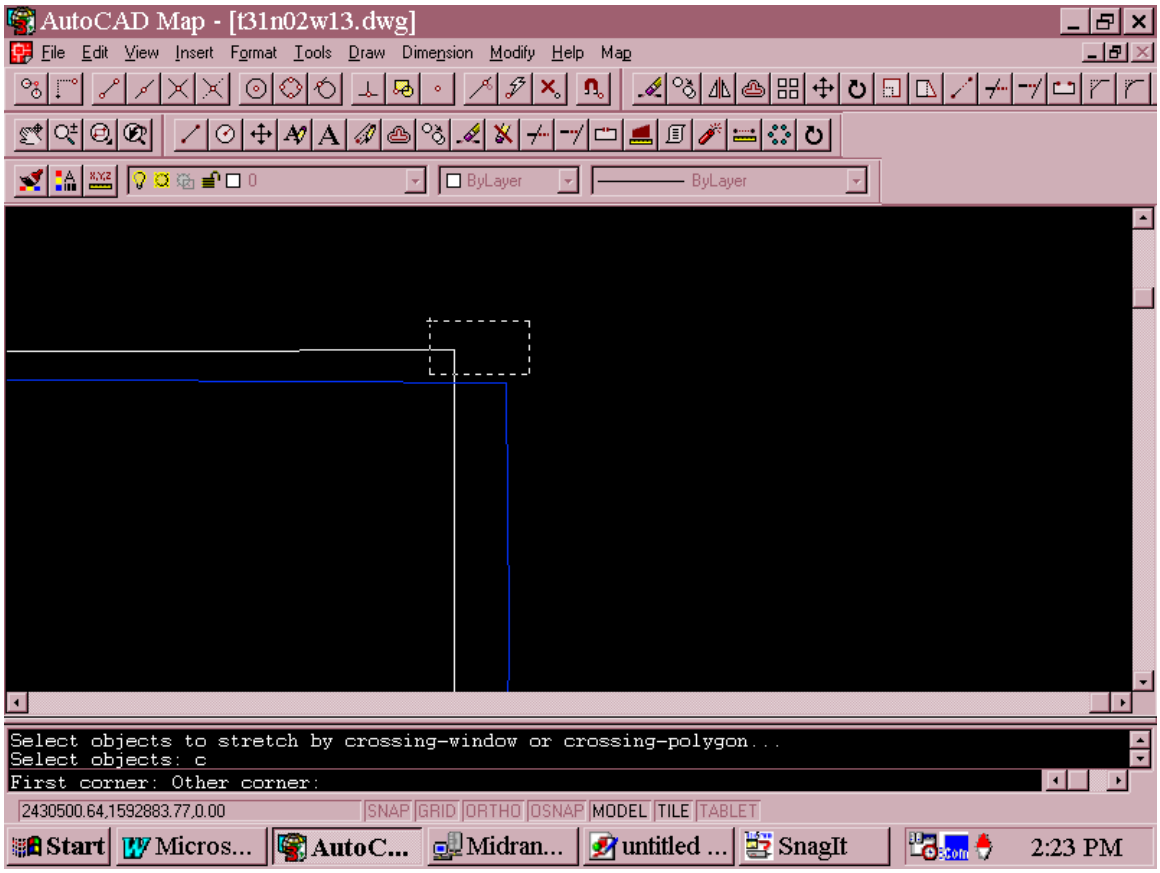
To use crossing-window type in c and return (see below)

Select objects:**c**

To use crossing-window type in cp and return (see below)

Select objects:**cp**

In the following example the crossing-window option was used (see below)



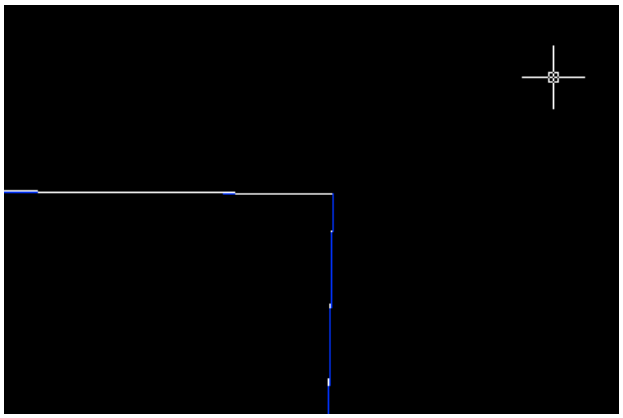
The user is then prompted to select a Base point or displacement:

The base point is that point to be moved.

The Second point of displacement: is the control (i.e., reference) point

NOTE: see **OBJECT SNAP OPTIONS** pg. L2

The end result of the **Stretch** is pictured below

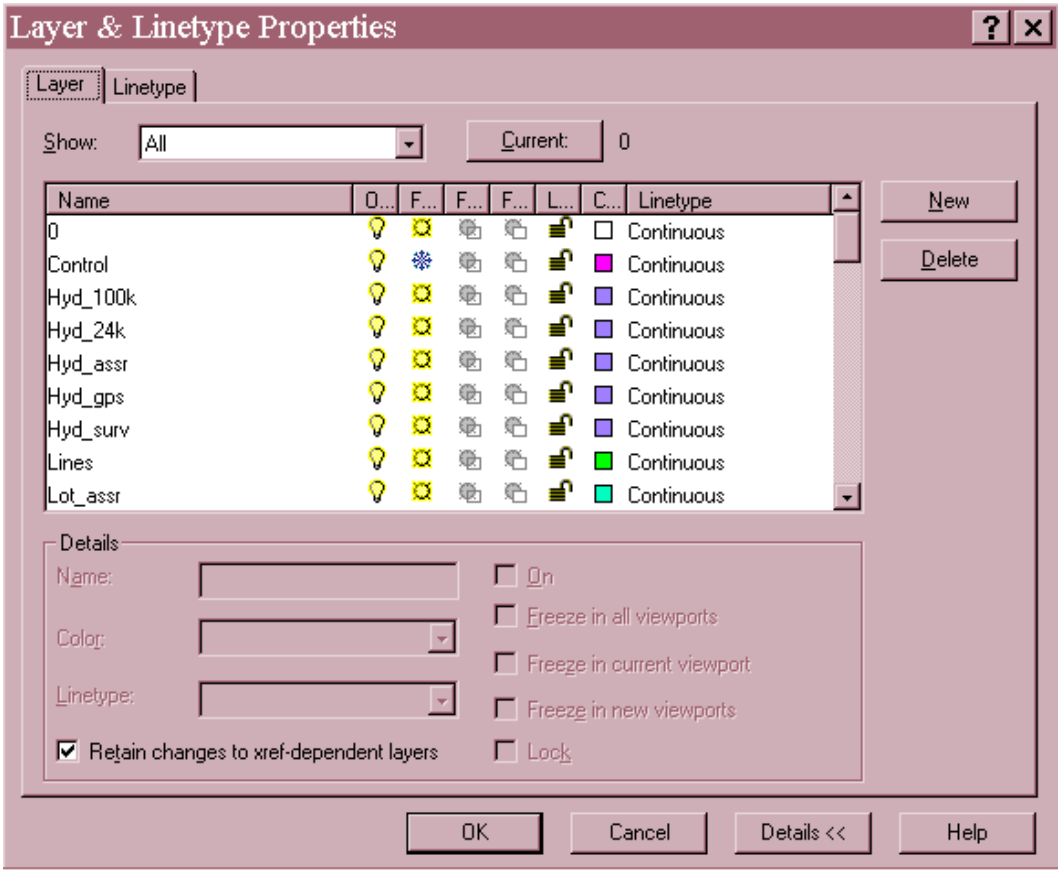


Procedures to 'freeze' layers

Layers can be 'frozen' independent of one another. This can be especially helpful in editing. 'Freezing' a layer essentially removes that layer from the current session. Thus, entities associated with a 'frozen' layer are shielded from being inadvertently becoming part of a selected set for some type of editing procedure.

To 'freeze' a layer from the **Format** menu select **Layer…**(see below)

Next, from the **Layer & Linetype Properties** dialog box simply scroll to the layer to be 'frozen' and 'left-click' the icon depicting the sun (indicating that the layer is currently 'thawed'). The icon will change to that of a snowflake (indication the layer is 'frozen'). Then 'click' **OK** (see below)



Procedures to set parcel layering template colors by layer

AutoCAD allows colors to remain independent of layer name. In other words, after inserting the ***parcel.dwg*** template into an existing file the user could modify the property of a given entity to a layer from the template and the color associated with that entity would NOT change to reflect the color of the layer as designated in the ***parcel.dwg*** template.

The following procedures will allow the user to modify existing entities (i.e., lines) to layers from the template AND have the color (as designated in the template) reflect the change.

NOTE: Prior to issuing this command if the current drawing was inserted as a block, the block must be exploded (see **EXPLODING A BLOCK**)

After inserting the ***parcel.dwg*** into the existing file (see **GETTING STARTED K.**, pg. E12) from the command line, type in change (see below).

Command:**change**

The user is then prompted to **Select objects**, type in **all**, and <enter> (see below)

Command:**all** <enter>

Next, at the **Properties/<Change point>**: prompt enter **p** (for **p**roperties) and <enter>

Properties/<Change point>:**p <enter**

Then, at the **Change what property (Color/Elev/LAyer/Ltype/ltScale/Thickness)**: type **c** (for **c**olor) and <enter> (see below)

Change what property (Color/Elev/LAyer/Ltype/ltScale/Thickness):**c** <enter>

Lastly, at the **New color <varies>**: prompt type **bylayer** and return and return again (see below)

New color <varies>:**bylayer** <enter> <enter>